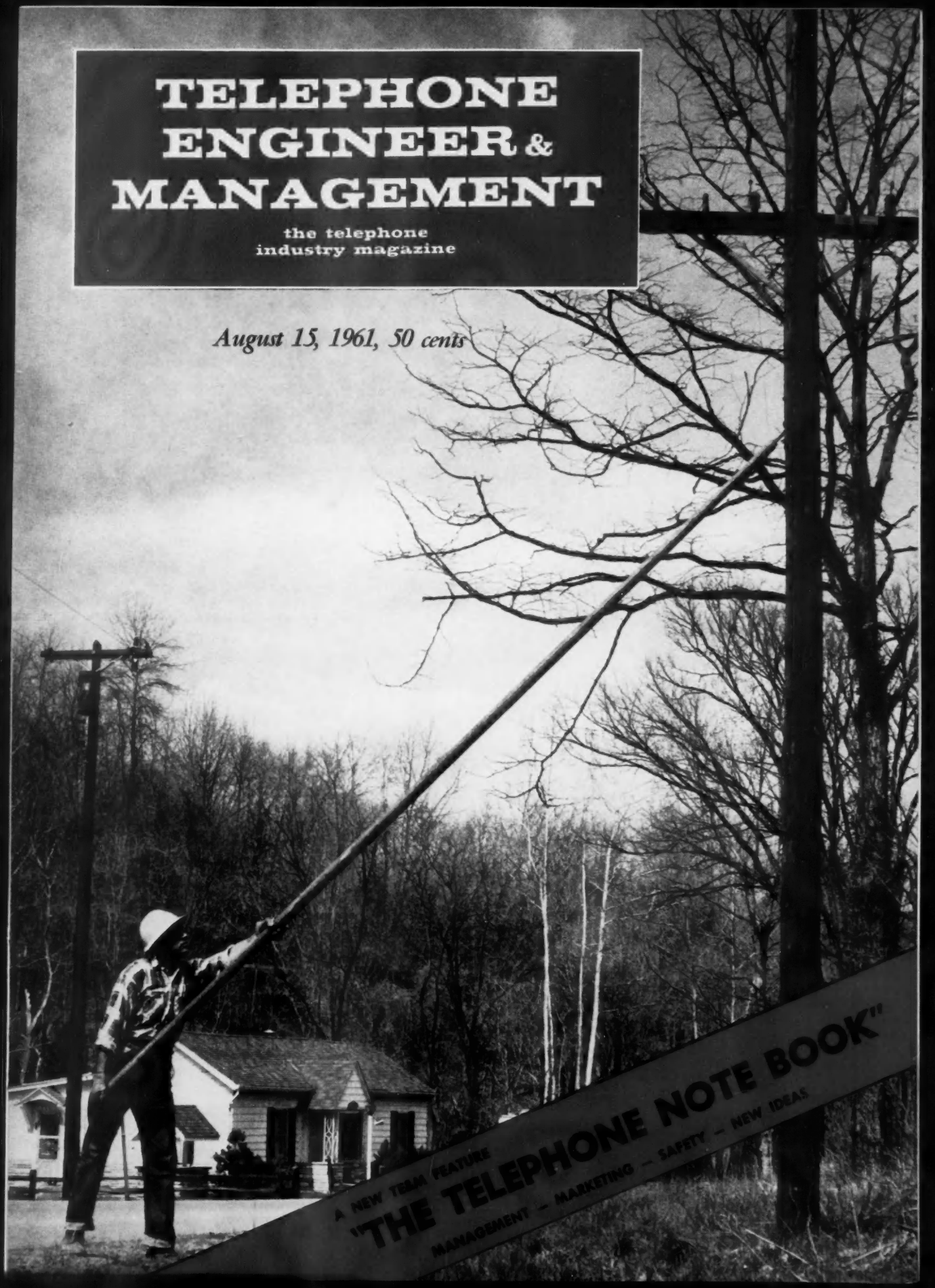
TELEPHONE ENGINEER & MANAGEMENT

the telephone industry magazine

August 15, 1961, 50 cents



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FRONT COVER: Earl Clark, lineman for Cincinnati & Suburban Bell Telephone Co., makes pike pole test to determine whether or not a pole is capable of withstanding the load to which it will be subjected. — (*Courtesy, "The Cincinnati Telephone Bulletin".*)

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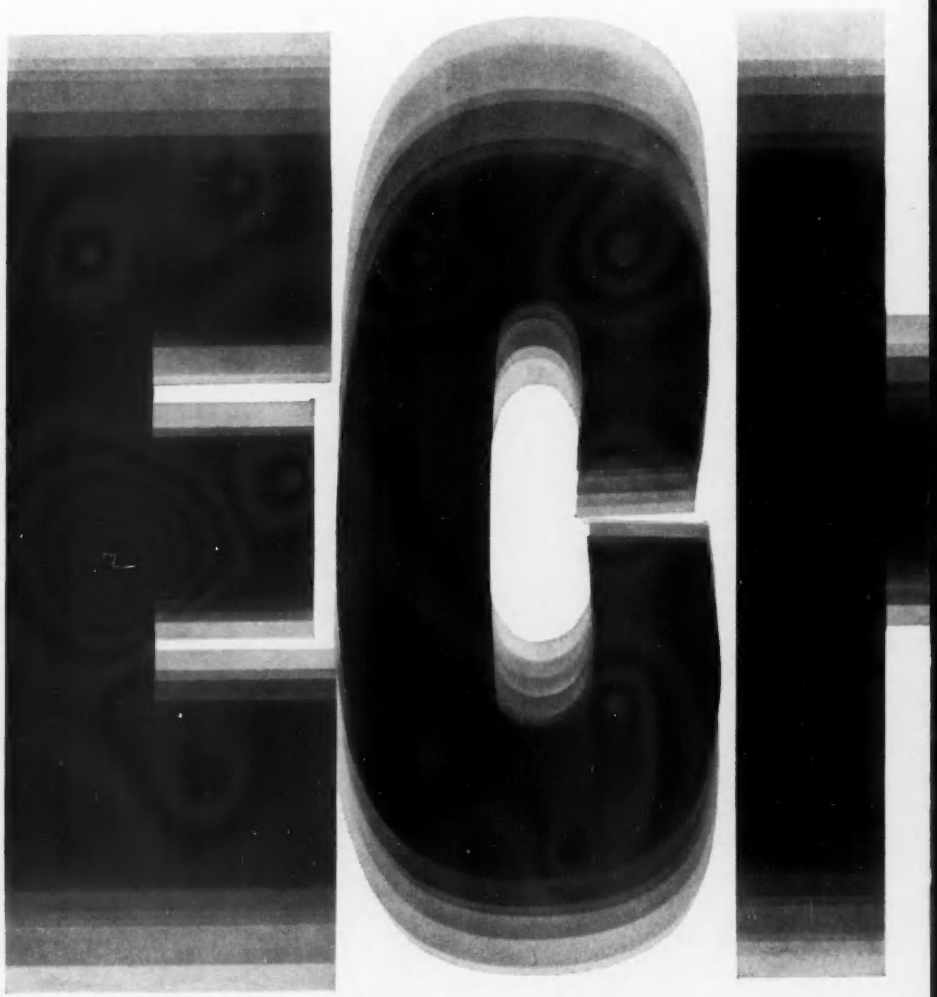

SILENCE ECHO WITH QUALPETH Keep echo, or "hollow barrel effect," out of your cable circuits. Let QUALPETH carry the conversation undistorted! It's because QUALPETH's unique manufacturing process leaves it dramatically free from electrical mismatches that can cause reflections. □ QUALPETH is available for aerial, duct or direct earth burial service...in up to 900 guaranteed pairs...and in guaranteed lengths, a QUALPETH exclusive. Identification is fast and easy with QUALPETH's brightly-colored polyethylene insulation and unit binder tapes. □ For any outside plant use—get QUALPETH, today's standard of quality. For details, see your distributor, or write General Cable Corp., 730 Third Avenue, New York 17, N. Y. □ Distributed by: Automatic Electric Sales Corp., Northlake, Ill.; Leich Sales Corp., 427 W. Randolph St., Chicago 6, Ill.

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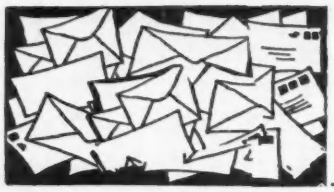


LETTERS to the editor

"Interesting & Useful"

To The Editor: — "Congratulations on the very fine Marketing Issue of July 15th. Once again you have created a book which is interesting, useful and provocative. I shall keep an issue handy for future reference . . ."

George B. Forbes
Publications Editor,
Telecommunication Division
G.D. | E., Rochester, N. Y.

"Reprints Wanted"

To The Editor: — "I would appreciate your sending me twelve reprints of the article, 'A Planned Sales Approach to the Business Customer' by Blaine Ward, which appears in your July 15, 1961 issue."

A. J. May
Marketing & Sales Manager
Gen. Tel. Co.'s of Ia., Mo., and Neb.,
Grinnell, Ia.

The above request is typical of many we received following publication of TE&M's "Telephone Marketing issue" on July 15. However, we are completely out of copies. Several companies have suggested that we reprint the articles as a "Marketing Handbook" for distribution to their employes. The cost of a handbook containing all articles published in the July 15 issue of TE&M would be $1.00. If you are interested let us know how many copies you will need. Send no money; we'll bill you when shipment is made. — Editor.

"Glad To Help"

To The Editor: — "I want to thank you for handling my request for "Free Literature" items. Had it been necessary for me to write to each company, I doubt the job would have been completed.

"We find it convenient to refer to our copy of the 'Catalog-Directory' many times throughout the year in locating suppliers of various items. Since some of these suppliers do not advertise regularly in any trade magazine available to us, we would be unaware of their existence were it not for *Telephone Engineers' 'Catalog-Directory.'*

"I think you have done a wonderful job in providing all telephone companies with a listing of suppliers and their products."

Raymond E. Drysdale,
Plant Supervisor
Eastern Illinois Telephone Co.
Rantoul, Ill.

"Yours To Use"

To The Editor: — "It is our intention to avail ourselves of your editorial policy of allowing editorials appearing in *Telephone Engineer and Management* to be reprinted without charge. Enclosed you will find four copies of each editorial reprinted from the March 1st and 15th editions of the magazine. Two hundred reprints have been made of each editorial for distribution to selected management people. Please accept our thanks for the privilege extended to us."

R. B. Snyder
Vice President
Wisconsin Tel. Co.
Milwaukee, Wis.

"Permission Granted"

To the Editor: — "We would like permission to reproduce two cartoons used in the July 15th edition of your magazine. One of the cartoons is on page 16 referring to the 10% excise tax, and the other is a humorous cartoon on page 106 . . . We intend to use these cartoons in our bi-monthly newsletter, *The Receiver*. This newsletter goes to all subscribers and employes of our company."

Richard D. Johnson,
Manager
Dickey Rural Tel. Mutual Aid Corp.,
Ellendale, N. D.

"Weather Resistant Phone"

To The Editor: — In the July 15, 1961, issue of *Telephone Engineer and Management*, we noticed on page 31, the following product, the 950 Weather Resistant Telephone. It also states this telephone is mounted in a heavy aluminum case. Will you please tell us who manufactures this telephone and case and where we may purchase one.We are particularly interested in the case."

H. W. Vaughn, President,
Alabama Telephone Co.,
Fayette, Ala.

Sorry we left this data out of the caption. The set is manufactured by Telecommunications Div., General Dynamics | Electronics, Rochester, N. Y. — Editor.

"Permission Granted"

To The Editor: — "We want to express our thanks for the excellent coverage given our Radar Terrain Profiling Technique in your May 1 1961, issue of *Telephone Engineer & Management*. We would like very much to have reprints of this article . . . . If these are not available, would you consider giving us permission to reproduce the article, giving recognition to *Telephone Engineer & Management* on each page? Thank you again for the fine coverage."

Garner A. Parks,
Engineering Assistant,
Television Associates of Indiana, Inc.
Michigan City, Ind.

"Hope It Helps"

To The Editor: — "We reproduced 175 copies of your editorial entitled 'Time for Excise Tax Action' in our annual report booklet. The booklets were distributed to the members at our last annual meeting. Four copies of the report are enclosed."

O. W. Scott,
Office Manager,
B K Tel. Mutual Aid Corp.
Steele, N. D.

"Regulation"

To The Editor: — "We have reprinted the series of articles on "Regulation" from *Telephone Engineer & Management*, and we are attaching four copies for your files. Thank you very much."

E. O. Faust,
Employee Information Assistant,
Southern Bell Tel. & Tel Co.,
Atlanta, Ga.

Sorry our own stock of reprints had been sold out. However, you did an excellent job of reprinting the articles. — Editor.

USITA

promotes service aims of Independent telephony

In the USITA (United States Independent Telephone Association) the communications industry has a force of sound, practical objectives. The dynamism of the program which motivates the USITA stems from the Independents themselves. For it is their awareness of their responsibilities that accounts for the fact that in the USITA scheme of things service to subscribers is of primary and paramount importance.

(This advertisement is not to be construed as an endorsement of any product by the United States Independent Telephone Association.)

Beginning its second half-century of service to subscribers throughout eastern and central Texas, the Gulf States Telephone Company recently marked its 50th Anniversary with the opening of this modern exchange building in Athens, Texas. The multiple booth installation pictured consists of three Sherron Model 18-S Type 1A acoustic steel telephone booths, modified to include entire stainless steel front sections with display section at one end. According to Mr. Rolla L. Johnson, vice-president and general manager, these booths are both summer-and-winter air-conditioned. This convenience is typical of the resourcefulness of Gulf States in providing its patrons with the finest in communications facilities.

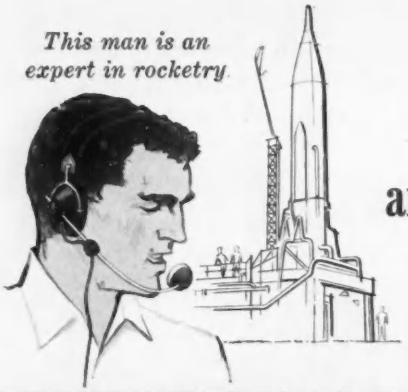
as demonstrated by GULF STATES TELEPHONE COMPANY

SEE OUR CATALOG IN SWEET'S — INDEPENDENT — Sherron ACOUSTIC SEE-THRU STEEL—STAINLESS STEEL OUTDOOR AND INDOOR TELEPHONE BOOTHS

There's a Sherron booth for every location and budget in either zinc coated or stainless steel

SHERRON METALLIC CORP., 1201 FLUSHING AVE., BROOKLYN 37, N.Y.

This man is an expert in rocketry

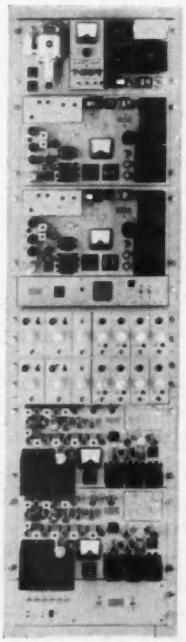


...and in Low and Medium Density Communications BUDELMAN is the

specialist

Result: Only BUDELMAN Builds the Complete Package...

reliable, economical, compatibly designed Radio and Speech Multiplex Systems for most systems requirements



Whatever your microwave need up to 60 channels, Budelman has the economical method of filling it.

- Type 14CW-2KMC Microwave Links for short-haul gap fillers or multi-hop repeater trunk circuits . . . Straightforward design and engineering . . . no Klystrons or other critical components or circuits . . . virtually *trouble-free.* 14CW links and 49A multiplex modules were designed for use together . . . *prove in* where other makes cannot.
- Type 14BN/BW-960MC terminals — your best buy for "thin-route" multiplex radio systems and spur circuits . . . for base station control, telegraph and telemetering. Low-cost companion 450MC equipment also available for multi-channel speech circuits.
- *FREE Spec File on request*

BUDELMAN
ELECTRONICS CORPORATION
375 FAIRFIELD AVENUE — STAMFORD, CONNECTICUT

coming CONVENTIONS

ALASKA Tel. Assoc., Hotel Not Announced, Palmer, Alaska, Aug. 21-23.

TENNESSEE Tel. Assoc., Arlington Hotel, Hot Springs, Tenn., Sept. 6-7.

WESTERN RURAL Tel. Assoc., Portland, Oregon, Sept. 7-8, 1961.

ROCKY MT. Tel. Assoc., Owyhee Hotel, Boise, Sept. 13-15.

ARKANSAS Tel. Assoc., Arlington Hotel, Boise, Ark. Sept. 11-12.

GEORGIA Tel. Assoc., Corsair Motel, Jekyll Island, Ga., Sept. 14-15.

MICHIGAN Tel. Assoc., Pantlind Hotel, Grand Rapids, Mich., Sept. 19-21.

NEVADA Tel. Assoc., Stockmens Hotel, Elko, Nevada, Sept. 19-21.

NEW ENGLAND Tel. Assoc., Poland Springs Hotel, Poland Springs, Maine, Sept. 24-27.

WEST VA. Tel. Assoc., Oglebay Park Hotel, Wheeling, W. Va., Sept. 26-27.

USITA CONVENTION, Conrad Hilton Hotel, Chicago, Ill., Oct. 8-11.

SOUTH CAROLINA Tel. Assoc., Clemson House, Clemson, S. C., Oct. 23-24.

VIRGINIA Tel. Assoc., Roanoke Hotel, Roanoke, Va., Oct. 26-27.

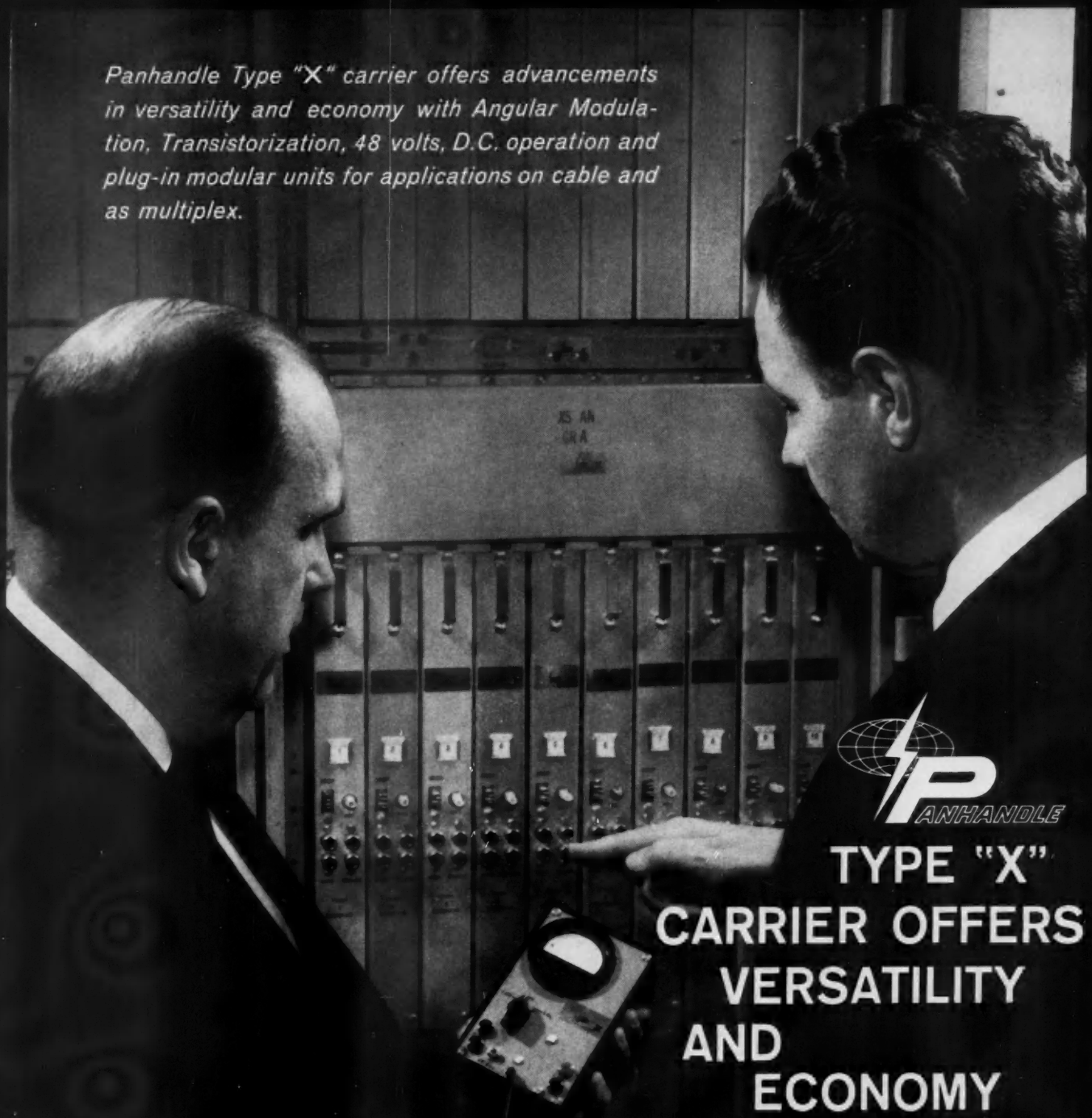
OKLAHOMA Tel. Assoc. Skirvin Hotel, Oklahoma City, Okla., Nov. 8-9.

ALABAMA-MISSISSIPPI Tel. Assoc., Thomas Jefferson Hotel, Birmingham, Ala., Nov. 11-13.

FLORIDA Tel. Assoc., The Carillon Hotel, Miami Beach, Fla., Nov. 26-28.

NORTH CAROLINA Tel Assoc., Carolina Hotel, Pinehurst, N. C., Dec. 4-5.

TEXAS Telephone Assoc., Sheraton-Dallas Hotel, Dallas, Texas, March 11-13, 1962.



Panhandle Type "X" carrier offers advancements in versatility and economy with Angular Modulation, Transistorization, 48 volts, D.C. operation and plug-in modular units for applications on cable and as multiplex.

PANHANDLE

TYPE "X" CARRIER OFFERS VERSATILITY AND ECONOMY

Type "X" carrier's versatility makes it applicable to cable and multiplex applications with simplified maintenance procedures and a minimum of common equipment. "X" carrier incorporates angular modulation, 100% transistorized 48 volt D.C. operation and plug-in modular construction in keeping with the communication industries requirements.

PANHANDLE ELECTRIC SALES, INC.

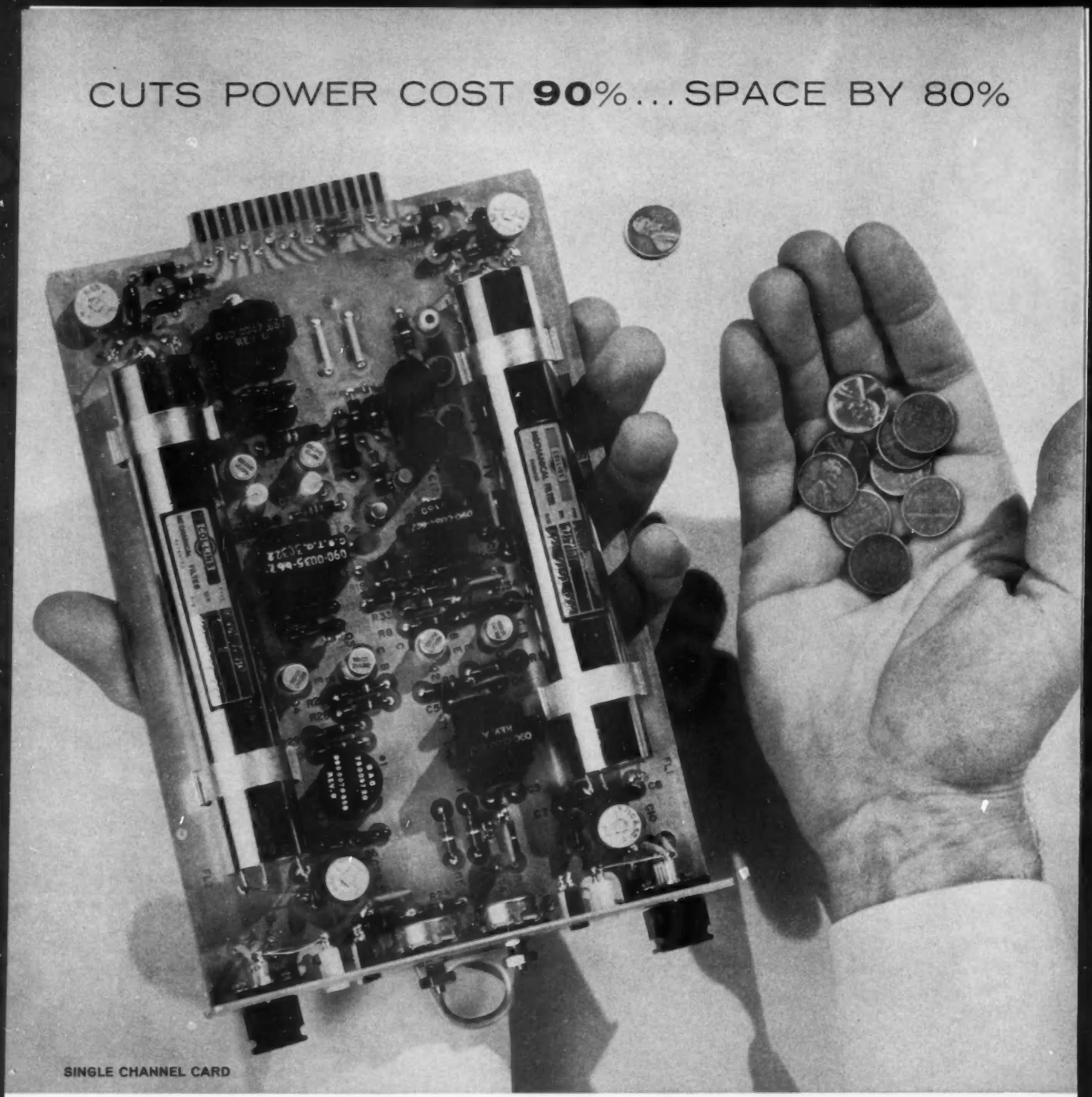
ARLINGTON, TEXAS

Marketed by

INTERNATIONAL TELETRONICS, INC.

616 BRANIFF AIRWAYS BLDG. DALLAS 35, TEXAS

CUTS POWER COST **90**%... SPACE BY 80%



SINGLE CHANNEL CARD

NEW COLLINS TRANSISTORIZED CARRIER...UP TO 600 CHANNELS

Now... the freedom of maintenance and reliability inherent in transistorized equipment, at a saving of up to 90% in power and 80% in rack space over tube equipment. This is Collins new MX-106 fully transistorized carrier. Either in microwave, wire or cable systems – or any combination of these – the new multiplex is compatible with Collins MX-103, Western Electric L-Type, CCITT, and other carriers. Its design permits easy and economical expansion to meet changing requirements. For details, write Collins Radio Company, Texas Division Sales, 1930 Hi-Line Dr., Dallas 7, Texas.

COLLINS MICROWAVE AND CARRIER

COLLINS

COLLINS RADIO COMPANY • DALLAS, TEXAS • CEDAR RAPIDS, IOWA • BURBANK, CALIFORNIA

NEWSLETTER
TELEPHONE INDUSTRY

Prepared By The Editorial Staff of TELEPHONE ENGINEER and MANAGEMENT

ON THE 1st OF EACH MONTH ★ ON THE 15th OF EACH MONTH

Dear Sir: August 15, 1961

STUDY PROCEDURES IN CONNECTION WITH NATIONWIDE STUDY OF INDEPENDENTS' COSTS OF HANDLING INTERCHANGED TRAFFIC TO BE MAILED THIS MONTH . . . Study procedures in connection with nationwide cost study agreed to by Bell System & U. S. Independent Telephone Association representatives earlier this year, at same time one-year interim increase in "A" toll settlements was agreed to for companies participating in wide area telephone service, will be distributed to Independents with selected study sample exchanges this month. More than 600 Independent exchanges have been selected by consulting statisticians retained by USITA & Bell System statisticians. Those responsible for study are convinced random sampling basis employed will provide highly accurate picture of Independents' costs of handling interchanged long distance business.

Final plans for study procedures were agreed to at meetings in Washington between USITA Message Toll Settlements Subcommittee, headed by Arthur W. Lambert of California Water & Tel. Co., & representatives of American Tel. & Tel. Co.

Other members of USITA subcommittee who participated in meeting were John M. Barnes, Rock Hill (S. C.) Tel. Co.; Jack C. Cluen, of United Tel. Co. of Ind.; Evert E. Karlsson, of General Tel. & Electronics Corp.; John McHenry, of Capital City Tel. Co., Jefferson City, Mo.; & USITA Settlements Coordinator Mervin H. Alexander.

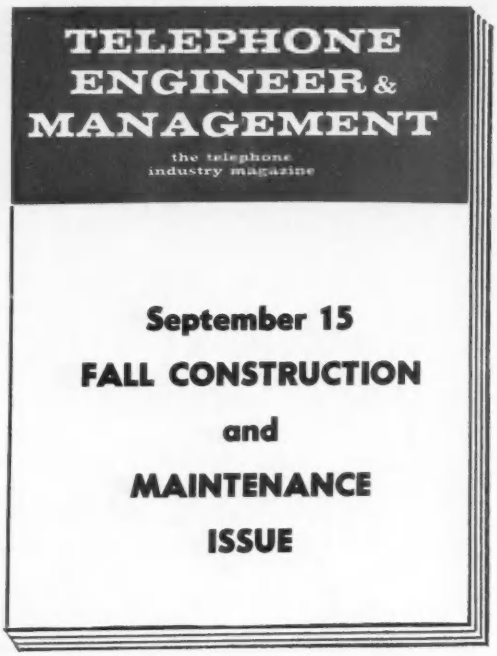
USITA said its consultants have emphasized importance of all selected study exchanges participating in "A" and "B" study project, to minimize sampling errors.

PACIFIC NORTHWEST BELL, CWA AGREE ON TERMS OF WAGE REOPENER PACT . . . New Pacific Northwest Bell Tel. Co. & Communications Workers of America reported agreement last month on new 12-month contract under the first of two wage reopener provisions in their existing three-year pact. About 5,845 Pacific Northwest Bell employes in plant, traffic, & accounting departments will receive pay raises ranging from $1.50 to $3 as result of agreement.

INTER-MOUNTAIN COMPANY EMPLOYES VOTE 407 'NO UNION' TO 253 FOR CWA . . . Employes of Inter-Mountain Tel. Co., Bristol, Tenn., have voted against having Communications Workers of America as their collective bargaining representative, it was reported last month. In a National Labor Relations Board-sponsored election, 407 Inter-Mountain employes voted for "no union," compared with 253 who marked their ballots for CWA.

REA GETS $162,500,000 TOTAL FARM PHONE LOAN FUND IN FINAL BILL . . . Both houses of Congress last month adopted & sent to White House an Agriculture appropriations bill calling for rural telephone loan fund of $162,500,000 for Rural Electrification Administration in fiscal year which began July 1. The $162,500,000 figure is the one proposed by Senate, as compared with $150,000,000 proposed by House. Joint House-Senate conference committee version of bill, as passed last month provides for $30,000,000 of total allocation to be in form of contingency fund, as adopted by House.

REA'S TELEPHONE LOAN TOTAL REACHED $818,257,000 AT END OF FISCAL YEAR . . . As of the close of 1961 fiscal year June 30, Rural Electrification Administration had



COMING — SEPTEMBER 15
FALL CONSTRUCTION & MAINTENANCE ISSUE

This big, special issue of TE&M will be packed with exclusive articles and feature departments discussing the newest developments in telephone construction and maintenance procedures. Here's a partial list of the contents:

- "Electrical Protection Methods," by John S. Reed.
- "Plant Training Programs," by R. Allen.
- "Temporary Grounding," by E. V. Glancey.
- "Subscriber Loop Plant Design," by F. E. Elrod.
- Plus TE&M's Regular Features.

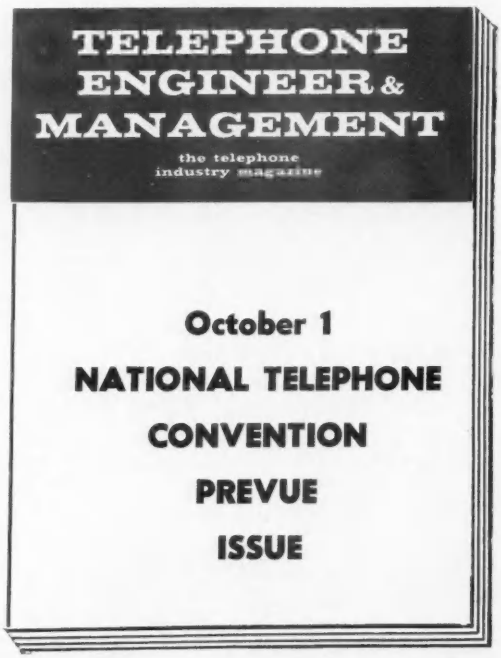
DON'T MISS THESE THREE

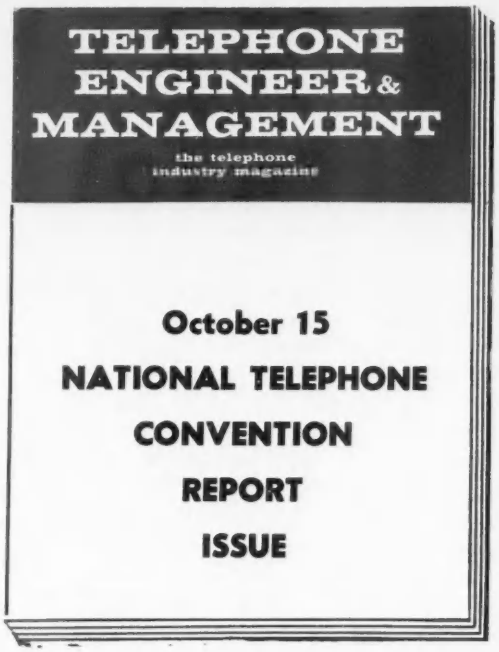
COMING — OCTOBER 1
TE&M's "NATIONAL TELEPHONE CONVENTION PREVUE ISSUE"

For the nation's telephone men and women October 8, 9, 10, 11 will be big, busy, and important days as they meet at Chicago's Conrad Hilton Hotel for USITA's 64th annual convention. The October 1 issue of TE&M will present a complete prevue of the USITA convention through these special articles and features:

- "The USITA Story," by John G. Reynolds.
- "USITA Convention Program."
- "USITA Convention Exhibitors."
- "Prevue of Convention Speakers."
- "Prevue of Annual Pioneer Meeting."

This issue will be mailed on Sept. 28 to nearly 16,000 members of the telephone industry — and additional copies will be distributed daily at the USITA Convention.





COMING – OCTOBER 15
TE&M'S "NATIONAL TELEPHONE CONVENTION REPORT ISSUE"

TE&M'S "National Telephone Convention Report Issue," containing a complete word-and-picture report on USITA's 64th annual convention will be "*must*" reading for all members of the telephone industry. Devoted exclusively to reporting the USITA convention, the issue will feature:

- "USITA Convention Report," by John G. Reynolds.
- "Report From USITA President C. C. Pearce."
- "Report From USITA'S Executive Vice President."
- "USITA Conference Reports – Accounting, Commercial, Engineering, Plant and Traffic."
- "USITA Convention Addresses."
- "USITA Convention Photographs"

This issue will be mailed to nearly 16,000 TE&M subscribers a few days after the USITA convention ends.

SPECIAL ISSUES OF TE&M

Of course we hope you are already a subscriber to TELEPHONE ENGINEER & MANAGEMENT. If you are, and have been for years, you know how important the three special issues described on these pages will be to you. TE&M's annual Fall issues – (1) *the September* 15 *"Fall Construction & Maintenance Issue,"* (2) the *October* 1 *"National Telephone Convention Pre-Vue Issue," and* (3) *the October* 15 *"National Telephone Convention Report Issue"* – are always popular with TE&M's regular subscribers.

However, if you are not a subscriber to TELEPHONE ENGINEER & MANAGEMENT, or have an associate who is not a subscriber, we suggest there is no better time than *right now* to enter a personal subscription. We will start it off with the September 15th "Fall Construction & Maintenance Issue" – and guarantee you a full year – 24 big issues – of a magazine that is written, edited and published to help telephone men and women become better telephone men and women.

We feel sure if you enter your personal subscription *now*, you'll soon discover, as thousands have, that TE&M and you should have got acquainted years ago.

TE&M is ready to start working for you right now. Your name on the Subscription Order Form (at the right) will start things rolling.

Place your THREE-year TE&M order now . . . and enjoy 72 issues of TE&M for less than twelve cents per issue!

Circulation Manager
TELEPHONE ENGINEER & MANAGEMENT
7720 Sheridan Rd., Chicago 26, Ill.

Please enter my subscription to TE&M for the period checked below: (Check one.)

☐ 3 years . $8.00 (72 issues) ☐ 2 years . $6.50 (48 issues) ☐ 1 year . $4.00 (24 issues)

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Date ..... Signature .....

(Please Fill Out Each Line) ....

Mail to TE&M, 7720 Sheridan Rd., Chicago 26, Ill.
8-15-61

(Concluded from page 9)

approved $818,257,691 in farm telephone loans since inception of the program, the latest statistical report, distributed last month, disclosed. REA said that 1,604,011 subscribers are estimated to be affected with 752,803 to receive initial service & remainder to get improved service. There have been 210 cooperatives obtaining REA loans, for total of $286,054,218, & 543 commercial borrowers, who have been given authorization for $532,203,473.

SOUTHWESTERN BELL CERTIFIED FOR TEXAS ACQUISITION; FILES IN MISSOURI . . . Public interest certification for Southwestern Bell Tel. Co.'s acquisition of the Bee Caves (Tex.) Tel. Co., was issued by the FCC last month. Purchase price of 'Bee Caves' facilities, just west of Austin, is to be about $13,000. Bee Caves company currently provides multi-party magneto service to 61 subscribers. Southwestern Bell is to convert exchange to dial operation within two years & install additional facilities to more adequately serve the area.

At same time, Southwestern Bell filed new application with commission for certification to cover acquisition of facilities of Rayville (Mo.) Tel. Co., which currently provides magneto service to 52 customers & switching service for 66 customer-owned magneto stations near Richmond, Mo. Proposed purchase price is $4000.

PUBLIC UTILITY FINANCING UP 77% IN FIRST HALF OF 1961 . . . Financing by nation's privately owned public utilities increased by 77% in first six months of 1961, totaling $2,910,000,000 against $1,646,000,000 in like period of 1960, according to Financial Consulting Service of Ebasco Services Incorporated. Telephone utility financing amounted to $1,503,000,000, a 333% increase over 1960's first half figure of $347,000,000, & gas utility financing increased by $185,000,000 to $590,000,000. Meanwhile, electric utility financing decreased by $75,000,000 to $813,000,000. Common stock financing rose to all-time Jan.-June high of $1,312,000,000, an increase of $1,020,000,000. Preferred stock offerings were up $41,000,000 to $175,000,000, & debt financing increased by $204,000,000 to $1,423,000,000. Ebasco study reveals that $2,431,000,000, or 84% of total; represented new financing. Refundings amounted to $478,000,000.

NEWS HIGHLIGHTS . . . . UNITED UTILITIES, INC., Kansas City, Mo., announced its purchase of BREMEN TEL. CORP., Bremen, Ind. Acquisition was made through exchange of stock; present plans call for Bremen property to be merged into UNITED TEL. CO. of INDIANA, INC. Acquisition will increase telephones served by United Tel. Co., of Indiana, Inc., to more than 85,000 in its 79 exchanges . . . OGDEN TELEPHONE CO., Spencerport, N. Y., has closed with Berkshire Life Insurance Co., Pittsfield, Mass., a loan of $250,000 20-year sinking fund debentures & $200,000 20-year convertible debentures. Proceeds will be applied to funding of bank loans & financing plant additions. This is Ogden's second loan arranged with Berkshire Life Insurance Co. . . . Board of Directors of COMMONWEALTH TEL. CO., Dallas, Pa., voted quarterly dividend of 25 cents per share to all common stockholders on record as of July 31, 1961, and payable August 15, 1961 . . . . Board of Directors of The Southwestern States Tel. Co., declared regular quarterly dividends on following classes of stock, payable Sept. 1, 1961 to stockholders of record August 1, 1961: Common Stock, 32¢; Preferred, $1.32 dividend convertible series, 33¢; $1.44 dividend convertible series, 36¢ . . . Board of Trustees of WEST COAST TEL. CO., declared regular quarterly dividends on following classes of stock, payable Sept. 1, 1961 to stockholders of record August 1, 1961; Common Stock, 34¢; Junior Preferred $1.44 dividend convertible series, 36¢.

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Mostly About People You Know

Otto Fuerst Retires; Hix Named Successor

AFTER NEARLY 65 years in the communications field, Otto Fuerst, president and general manager of the United Telephone Co. of the West, Scottsbluff, Neb., has retired from active service. On July 1, Fuerst became chairman of the board, and Verne E. Hix assumed the presidency of the subsidiary of United Utilities, Inc.

FUERST

HIX

A sleet storm in 1896 at Norfolk, Neb., provided Fuerst with his first job in the communications industry, that of lineman on railroad telegraph lines. It was seven years later, in 1903, that he made the decision to associate with the Norfolk Long Distance Telephone Co., at Norfolk, Neb. Fuerst has served in the Independent telephone industry continuously for the past 58 years.

In 1907, he began his long tenure of management responsibilities as plant superintendent of the Norfolk Long Distance Telephone Co. In 1911, he became manager of the Platte County Telephone Co., Columbus, Neb., and in 1918 was the plant superintendent of the Wyoming-Nebraska Telephone Co., in charge of establishing toll leads between Nebraska and South Dakota.

In 1919, Fuerst moved to Scottsbluff, Nebraska, as plant superintendent of the Platte Valley Telephone Co. At that time the company was served entirely by magneto switchboards, and all exchanges were served by one grounded toll line extending east and west from Scottsbluff. The Platte Valley Co. was acquired by the United System in 1953, and the name was changed to United Telephone Co. of the West. All exchanges are now dial operated with nationwide direct distance dialing available to subscribers. In addition, over 150 toll circuits provide long distance service to the nation and the world.

Fuerst's management responsibilities advanced through the years. He has served as the resident operating head at Scottsbluff for nearly 30 years. He was elected president and general manager of the United Telephone Co. of the West in 1958.

Fuerst has been active in both industry and civic associations. He has served the Nebraska Telephone Association for 23 years, from 1932 to 1955 as a director of the association, and for two terms, 1942 and 1943, as president. He is an active supporter and member of the Telephone Pioneers of America, Casper E. Yost Chapter.

Hix was named assistant to the president of the United Telephone Co. of the West in March, 1961. Prior to this assignment, he was the general commercial manager of the United Telephone Companies of Missouri, Kansas and Arkansas at the general offices in Kansas City. He has been with the United Companies and predecessor companies since 1939.

Following education in Iowa, Hix entered the telephone industry as a lineman with the Iowa State Telephone Co. in 1939. After serving in the South Pacific Theater with the Army Signal Corps from 1942 to 1945, he transferred to the Central Missouri and Arkansas Associated Telephone Companies at Warrensburg, Mo., as plant superintendent. When these properties were merged with the United System in 1954, he transferred to the Kansas City office as purchasing agent and plant engineer for the United Telephone Companies of Arkansas, Kansas and Missouri. Hix was promoted to outside plant and staff engineer in 1956, and was named general commercial manager of the three operating companies in 1958.

Harry J. Huether Retires From General Tel. of Ky.

HARRY J. HUETHER, Jr., chairman of the board of General Telephone Co. of Kentucky, Lexington, retired on July 1 after 38 years of service in the telephone industry. Huether will continue as a member of the board of directors, and the post of board chairman will not be filled.

Huether has served with General Telephone of Kentucky since 1950. Long active in community affairs, he is an officer of various leading civic and business groups.

A native of Hastings, Pennsylvania, Huether attended Pennsylvania State College, where he majored in electrical engineering. He began his telephone career in 1923. After six years with the Bell Telephone Co. of Pennsylvania, he became telephone engineer for the Pennsylvania Public Utility Commission. In 1935, Huether joined the General Telephone System as general commercial superintendent of the Pennsylvania Telephone Corp., predecessor company of General Telephone Co. of Pennsylvania. He was later elected vice president of that company, a position he held until 1943.

HARRY HUETHER

Moving to Ohio late in 1943, Huether became vice president and general manager of the Ohio Associated Telephone Co., a predecessor company of General Telephone Co. of Ohio. In 1946, he became vice

Please turn to page 16

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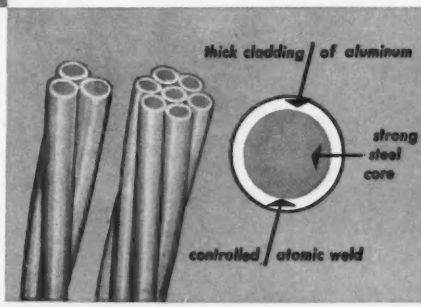

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"Mostly About People"

(Concluded from page 14)

president and a director of General Telephone Directory Co.

In 1948, Huether was appointed general commercial superintendent of a group of General Telephone operating companies in Indiana, Michigan, and Kentucky.

In March, 1950, Huether was elected president of the Lexington Telephone Co. and the Ashland Home Telephone Co., both predecessors of General Telephone Co. of Kentucky. On July 1, 1960, he became chairman of the board of General of Kentucky.

S. W. Bell Announces Texas Appointments

BUDD REINHOLD has been named to the new position of general manager in the North Texas area of Southwestern Bell Telephone Co. In another appointment to a new position, P. G. Willbanks has been promoted from general traffic manager for North Texas to assistant vice president — staff for Texas. They report to Richard A. Goodson, vice president and general manager for Texas.

Norman Gessley, general plant manager for the company's South Texas area, succeeded Reinhold as assistant vice president-operations at headquarters in St. Louis.

Joe H. Hunt, assistant vice president for training and employment, has been promoted to general plant manager in South Texas.

Paul P. Cheatham has been named general traffic manager for North Texas. He was division traffic superintendent at Houston and has been succeeded in this job by Frank L. Pyle, South Texas traffic supervisor.

United Utilities Announces Three Staff Appointments

UNITED UTILITIES, INC., has announced three executive staff appointments in the parent company offices at Kansas City, Mo.: R. M. Crockett has been named administrative director; Don D. Childers, revenue requirements director; and Forrest J. Eherenman, information director.

In his new assignment, Crockett will coordinate administrative policies and technical telephone operations of the United System throughout the 15-state area in which it operates. Crockett has served as staff coordinator of the parent company for the past year. Prior to joining the United System in 1960, Crockett was vice president and general manager of the Northwest Telephone Co., Redmond, Ore. The Northwest Telephone Co. was acquired by United in 1960, and merged with the Oregon-Washington Telephone Co., a wholly-owned subsidiary.

Crockett began his telephone career in 1944 with the plant department of the Ohio Bell Telephone Co. In 1948 he accepted a position with the Sunland-Tujunga Telephone Co., Sunland, Calif., where he engaged in plant and general office work. Following this association, he started as local manager for the Citizens Utilities Co. of Calif. in 1952, and progressed to general manager of the commercial, traffic and accounting departments. His affiliation with the Northwest Telephone Co. began in 1955 when he accepted the position of general manager.

Don Childers will supervise and coordinate revenue requirement activities for the United System. Childers returns to United following an interim association with the International Telephone & Telegraph Co. in New York City. He started his telephone career as a staff accountant with the Washington Public Service Commission in 1946. In 1948, he joined the Oregon-Washington Telephone Co., Hood River, Ore. With this United subsidiary, he served in various capacities; the last position being that of general commercial and traffic superintendent.

In 1958, Childers was named connecting company agent for the United Telephone Companies with offices in Kansas City. In 1950, he was appointed staff coordinator for the parent company, and served in this position until associating with ITT in the same year. Childers served as director of administration for the telecommunications operating group of ITT during 1960 and 1961.

In assuming the position of the newly created post of information director, Forrest Eherenman will be concerned with public relations, advertising, dissemination of internal information and the coordination of marketing activities throughout United's telephone operations. Prior to this appointment, Eherenman served as general commercial supervisor for the United Telephone Co. of Indiana, Inc. He began his telephone career as a commercial representative with the Indiana subsidiary in 1946, and was promoted to his position as general commercial supervisor in 1954.

CROCKETT

CHILDERS

EHERENMAN

WHAT'S YOUR STORY?

To keep TE&M's new department — *"Mostly About People"* — going, the editor of TE&M does need your help. So send us stories and pictures of the people in your company who have been promoted, honored, or retired. Send all items to Editor, TE&M, 7720 Sheridan Rd., Chicago 26, Illinois.

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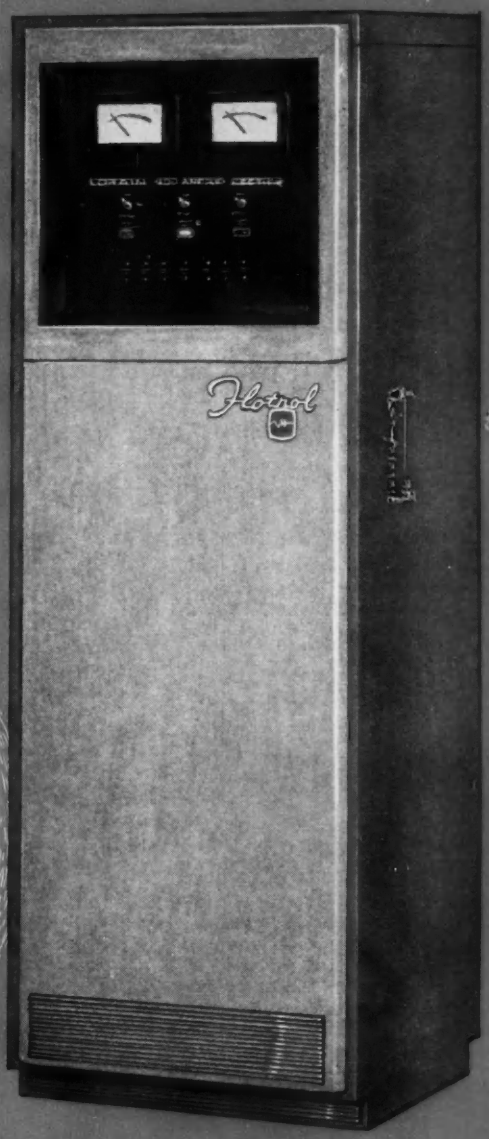

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INDUSTRY VIEWS

RICHARD B. HOBSON, Lincoln, Neb., was elected president of the Frank H. Woods Chapter of the Independent Telephone Pioneer Association in a statewide election last month. He succeeds Gay T. Henderson of Lincoln. Hobson is traffic equipment engineer of The Lincoln Telephone & Telegraph Co. The election was announced at the Chapter's annual banquet and reunion at the Cornhusker Hotel. The meeting also featured a hobby show. Others elected were Miss Grace Hauschild, vice president; Adrian M. Newens, secretary; and Charles N. Conners, treasurer. All are of Lincoln. Edwin J. Flowerday of Hastings and Mrs. Georgia Smith of Lincoln were elected as members of the executive committee.

FRANK D. FANCHER of Middletown, New York is presented with sterling silverware by Executive Secretary HAMILTON A. CUNNINGHAM commemorating Mr. Fancher's retirement from the NYSTA board of directors after serving continuously for 40 years. Fancher was the only charter member of the board still serving, being a member of the group which formed NYSTA in January 1921.

Open House was held by Wood County Telephone Co., Wisconsin Rapids, on June 29 to acquaint telephone operating companies with the advantages of participation in the nation-wide subscriber toll dialing network. An automatic toll ticketing system was cut into service on June 1 by the Wood County Company, thus making it possible for subscribers in the area to dial direct to phones in the United States and Canada. Above, discussing operation of one of the universal registers, are, left to right, RICHARD H. GRIEBEL, vice president and general manager, ITT Kellogg; GEORGE A. STRICHMAN, ITTK president; and H. B. (BERT) FLOWER, vice president and general manager, Wood County Telco.

FRED S. FLORANCE, Monroe, N. Y., past president of NYSTA and president of Highland Telephone Company, presides over final session of the recent New York State Telephone Assoc. convention.

Among those present at luncheon honoring Brig. General Frank W. Gillespie and his staff officers at Lakewood Center near Tacoma, Wash., were (l. to r.): CARLTON E. APPELO, manager, Western Wahkiakum Co. Tel. Co. serving SAGE site P-57, Naselle; A. J. ZIMMERMAN, executive vice-president, Washington Independent Telephone Association, Seattle; BRIG. GEN. FRANK GILLESPIE, Seattle Air Defense Sector Commander, McChord, A.F.B., Wash.; DON HOFSTRAND, commercial representative, West Coast Tel. Co., Everett, Wash., serving Paine Fighter Base.

Officers & directors New York State Telephone Association (L. to R.) Seated): Secretary-Assistant Treasurer DONALD F. DAVISON; President GEORGE S. BECKWITH; Vice President C. RAY LLOYD; Treasurer W. MALCOLM GRISWOLD and Executive Secretary HAMILTON A. CUNNINGHAM; Standing (L. to R): — Directors S. FENTON BUSFIELD, LEWIS F. SHEPHERD, MARSHALL K. TAYLOR, RODERICK A. NIXON, WILLIAM A. KERN, WILLIAM S. KINGMAN, FRED S. FLORANCE, and JOHN B. ACKLEY.

WILLIAM A. KERN, president of Rochester (N. Y.) Telephone Corp., addresses the 39th annual convention of the New York Association.

Last month Telephone Utilities of W. Va., announced the completion and cut-over of central offices at Marlinton, Arbovale and Frankfort, West Virginia. Total amount of equipment installed was 980 lines and 3,000 terminals. In the above photo HOWARD G. PAYNE (right), president of Telephone Utilities of West Virginia makes final personal equipment check at the Arbovale central office prior to accepting the office while GEORGE BAKER, manager of customer service for United States Instrument Corp. looks on. The three properties were formerly served by magneto systems. In the process of renovation and modernization, all magneto boards were removed and Lewisburg (W. Va.) was chosen as toll exchange.

MRS. WILLIAM S. KINGMAN of Norwich, N. Y. accepts sterling silverware from Executive Secretary HAMILTON A. CUNNINGHAM in behalf of her father, William A. Seely, who retired from the NYSTA board of directors after serving continuously since 1922.

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INDUSTRY OBSERVATIONS

By L. A. GRITTEN

In The Silver Country

FALLON, Nevada is a little city of about 2500 people in Churchill County, roughly 60 miles east from Reno, a little less from Virginia City, in an area made romantic by Mark Twain. (In the Virginia City print shop where Mark Twain gained his newspaper experience, they display to tourists the toilet bowl, open and unconcealed, whereon Mark spent his more reflective moments). In the early days, Western Union operated a telegraph line from Virginia City, through the area where Fallon is now located, to the silver mines farther east.

In 1889, W.U. abandoned the line. Silver was playing out. But the sturdy people of Churchill County were not playing out; they bought the line for $975 and went into the telegraph business. Seven years later a magneto telephone system replaced the ancient telegraph. Silver was unimportant and the arid land grew green here and there, when in 1914 Uncle Sam moved in with irrigation schemes and a telephone system of his own.

Later, the Churchill County Telephone & Telegraph Company bought out the government system. Today it operates some 2700 dial telephones and has well over $1 million of plant in service. The Churchill company publishes a 42-page statistical report. In addition to a review of its history and growth, it includes a 2½"x 2½" photograph of each of its 34 employes, from manager to janitor, with descriptions of them and their work.

Quite an outlay for a small company, no doubt; but we'll wager they get it back many times over, in esprit de corps and good solid employe self-respect. In this highly mechanized age, it does a human being good to feel that his personality and his work are not merely statistical fodder for a computer.

"Look Upon The Rainbow . . ."

FOR too long we lay under the pall of the Puritan aversion to bright colors. Only yesterday, to be classed as commercially respectable, our clothes were dark, our automobiles black, our stationery somber.

We have escaped. Once again, as in the glittering days before Cromwell, we revel in a splash of spectrum. Item: West Coast Telephone Company trucks are shedding their dull green and blossoming out in vivid yellow. Item: General Telephone crews wear helmets of an iridescent scarlet that would blaze through a London fog — and their trucks are gleaming white. Item: Minnesota Telephone Association sports a snappy letterhead, with the "M" camouflaged as an eye-catching red telephone handset.

Anyone Got A Loincloth?

CONSIDER Mohandas K. Gandhi. No, it is not his anniversary. We've merely been doing our writing by a Montana lake, watching the bathers and pondering the mystery and futility of life. Such as the wrong people, the rubber tire and varicose vein variety, wearing the scantiest clothes. Such as too many of us living, if that is the word, in miasmas of rules, regulations, uniform systems of methods and accounts, commission orders and other social and economic diseases. Too much taxation to pay for more and more damphool things we don't like and don't believe in; the frustrating cost of the few things we do want; the stupidity of the

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Catalog Number	BD Type	BD PEDESTALS: Prot. & Unprot. Term Blk Cap. Qty.	Prot. & Unprot. Term Blk Cap. Size	Load Coil Capacity Qty.	Load Coil Capacity Size	Maximum Cable To Be Spliced Pairs	Maximum Cable To Be Spliced Gauge
521-119	1 & 2	2	1 pr., or	2	1 pr., or	2 buried wires or	
		3	6 pr.	2	3 pr.	18	22
521-110	1A & 2A	3	6 pr.	2	3 pr.	18	22
521-120	3	6	3 or 6 pr.	6	3 pr.	100	22
521-136	3A	6	3 or 6 pr.	6	3 pr.	100	22
521-166	4	10	3 or 6 pr.	10	3 pr.	400	22
521-183	4A	10	3 or 6 pr.	10	3 pr.	400	22

BD TERMINAL ACCESSORIES

Catalog Number	Protected Terminal Blocks, Without Leads
81-175	Reflective warning sign.
81-280	3 pair, with 41-285 arrester.
81-281	6 pair, with 41-285 arrester.
81-285	3 pair, with 41-610 arrester.
81-286	6 pair, with 41-610 arrester.
81-200	6 pair, unprotected terminal block, without leads.
81-184	6 pair, washer gap protected, without leads.
81-196	Aluminum warning sign.

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things we have to own and do, whether we like 'em or not.

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Mohandas Gandhi had the answer. He was a clever lawyer, who looked well at a formal affair in striped trousers and tall hat. He was a superlatively able politician. Then he tossed away his clothes and every iota of conventional attachment or obligation. Like Kipling's Gunga Din:

"The uniform 'e wore, was nothing much before
An' rather less than 'arf o' that be' ind."

He ceased to own anything a government could tax. But he mixed with kings, governors, aristocrats, rulers, merchants and the poorest of the poor — and accepted tribute from all of them. He went everywhere, from palaces to jails, and someone else always arranged the transportation and picked up the bills.

He gained the supreme happiness: He lived as he wanted to live; he achieved his ambition; and he won the adoration of millions.

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Many companies are ordering copies of TE&M's new Handbook for distribution to employes. Prices are: 1 - 5 copies $2.00 each; 6 - 25 copies $1.75 each; over 25 copies $1.50 each.

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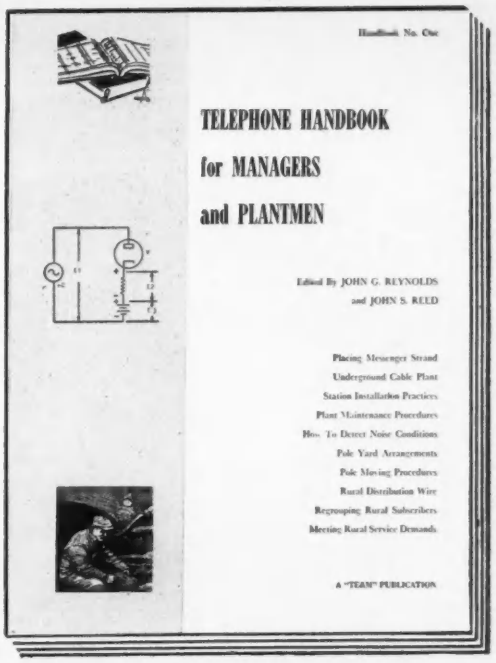

Oregon Independent Telephone Association's "Newsletter" recently published a review of TE&M's new Handbook and stated — "This should be on the desk of everyone who is concerned with up-to-date telephone service."

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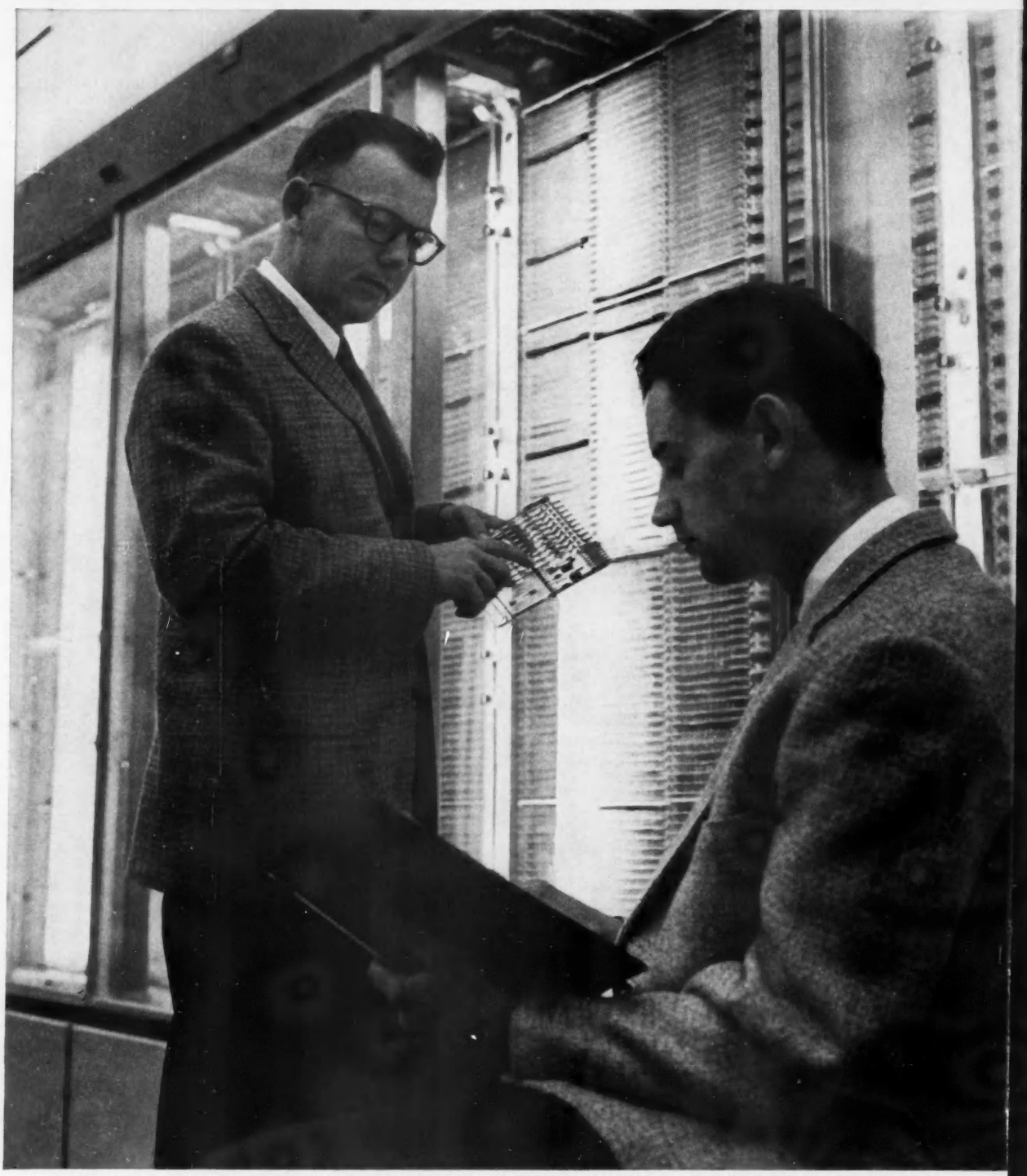
WESTERN ELECTRIC AND



SWITCHING NETWORK for the world's first Electronic Central Office in Morris, Illinois, contains thousands of neon gas tubes. Here, an installer of the Western Electric Company holds a modular unit that he is checking with a Bell Laboratories technician.

ELECTRONIC CENTRAL OFFICE

New experimental switching system at Morris, Illinois, demonstrates the essential role of Western Electric in the Bell Telephone System. Four hundred telephone users are the first to enjoy the advantages of the revolutionary electronic office which works thousands of times faster than the present type and offers new economy of operation.

Western Electric has manufactured a major part of the components and assemblies for the world's most exciting telephone central office. Located at Morris, Illinois, this office is the first switching system to perform electronically every function in handling telephone calls. To help make this trial possible, Western Electric has worked closely with Bell Telephone Laboratories, converting the designs of the Laboratories into factory production.

At least four major Western Electric manufacturing locations have provided specialized services or components for the Electronic Central Office. Hawthorne Works in Chicago produced the original circuit and electronic packages and assisted the Laboratories in the design of the equipment. Indianapolis Works built the special phones. Allentown Works made the entirely new-type, tiny gas tubes and the 138,000 semiconductors, which, with other electron devices, perform the switching operations. W.E.'s Columbus Works has since assumed responsibility of engineering and control location for the project known as ECO.

ECO makes possible new services which will greatly increase the value of each customer's telephone. With a built-in memory that retains millions of bits of information, electronic switching works thousands of times faster than standard equipment and offers new economy of operation. At present, ECO permits its trial users to:

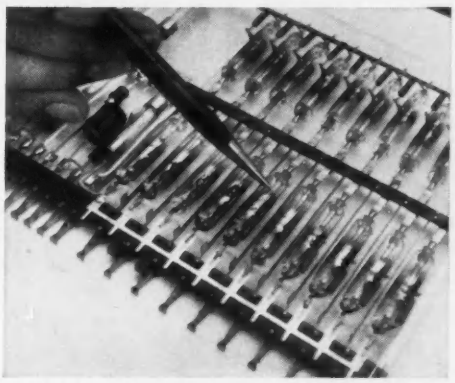
- Use home extension telephones as intercoms
- Reach frequently-called numbers by dialing only two digits instead of seven
- Have incoming calls routed to another phone when the line originally called is busy
- Dial a code which causes automatic transfer of all subsequent incoming calls to be automatically transferred to other local numbers.

Western Electric is proud of its essential contributions to this new system, which was installed in the summer of 1959 by a team of specially trained W.E. installers. This group, working with Bell Laboratories and Illinois Bell personnel, helped to put the equipment through an exhaustive series of tests to attain maximum performance and reliability.

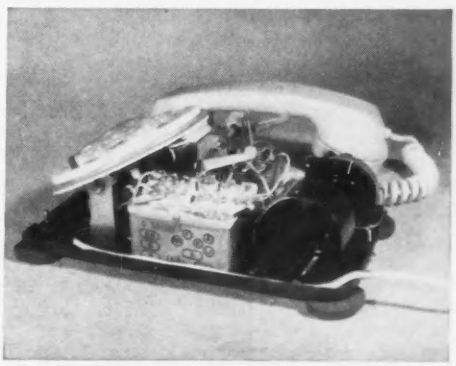
Based on this experience, Western Electric engineers will be able to make significant contributions to future Electronic Central Offices by helping to select the most economical design for manufacture. Most important of all, Western's experience will be of great value in planning for the production of further improvement in switching systems for the Bell System.

Western Electric

MANUFACTURING AND SUPPLY UNIT OF THE BELL SYSTEM



CLOSE-UP of the entirely new gas tubes used in the Electronic Central Office switching network points up their tiny size. More than 23,000 of these hard-working miniatures are used in the Morris trial office.



SPECIAL TELEPHONES — Western Electric built specially adapted telephones for the Morris test with "beeper" networks instead of the usual ringing sound. More than 400 of these new instruments are in use.

PLUG-IN PACKAGE made by Western Electric for Electronic Central Office consists of transistors, diodes, and other electronic components. Thousands of these cost-cutting printed circuit boards were used.

SEND YOUR PROBLEMS TO TE&M

A glance through the mail received daily at TE&M's office is enough to prove that readers all over the world bring their problems and questions to TE&M. And we're happy they do. Believing that the questions and problems presented by TE&M readers, and the answers prepared by TE&M's editors, will be of interest and value to all readers, we have developed this TE&M feature, and we hope you will use it whenever you need a fast correct answer to a question, or a solution to some operating problem. Send your questions to: *Editor, TE&M, 7720 Sheridan Rd., Chicago 26, Ill.*

QUESTION: — *What is the standard method of loading telephone cable? Are requirements different for loading rural distribution wire?*

ANSWER: — Loading is required where necessary to meet established transmission standards. These standards require a maximum transmission loss between the exchange and the most distant subscriber not to exceed 6 DB. The loss between exchanges, and between the exchanges and the toll center should not exceed 3 DB for usual cases. The most common loading method employs 88 millihenry inductance coils spaced 6000 feet apart, which is termed H-88 loading. With standard telephone cable having a capacity of approximately .08 to .09 MF per mile, the transmission frequency characteristics are suitable for a good grade of telephone service. With modern high efficiency telephones, this provides the best possible grade of service.

Both lead covered paper insulated and plastic jacketed cable in all sizes meet the capacity requirements for H type loading and, therefore, a composite circuit made up of this size conductors will have good transmission characteristics. As for rural distribution wire, this facility also has electrical characteristics which match the cable. Although the characteristics of rural distribution wire are slightly altered by wet weather, the effect is not noticeable. Rural distribution wire should be loaded at intervals of 6000 feet, the same as for cable.

In the loading procedure, the first loading point is 3000 feet from the central office. The second loading point is 6000 feet from first loading point, and subsequent loading points are the same distance apart.

QUESTION: — *Is there a sealing substance available for closing small holes in rural distribution wire conductors made when a test set is clipped on the conductors?*

ANSWER: — Although there is a sealing compound for repairing bare spots in plastic insulated station wiring, we know of no comparable substance for rural distribution wire. In this connection, we do not believe that the puncturing of wire insulation with test set clips is a good practice. We are aware that many telephone plant men have been following this method for years. However, the tiny holes can cause trouble through moisture entering. Moreover RD wire insulation has high dielectric strength, (10,000 volts break down) and this very desirable quality would be greatly reduced by the smallest hole in the insulation. We recommend the use of an inductive tone test set and sensitive amplifier equipped with pick-up probe. With this type of test set, it is possible to locate trouble in the RD wire without the need for puncturing the insulation of conductors to pick up the tone. As for making connections for talking purposes, these connections should be only at permanent terminals. Present day RD wire has colored conductors so individual conductors can be identified for connecting subscriber drops without having to puncture or remove insulation.

QUESTION: — *We are considering the use of seat belts in our vehicles. What are the requirements that will assure safe, reliable belts?*

ANSWER: — Good seat belts are indispensable to prevent serious injuries in automobile accidents. The method of installation, the quality of the belt material, and type of buckle are important factors in their selection. The Automotive Crash Injury Research Group at Cornell University recommends the following belt specifications:

(1) Minimum pull strength of belt and buckle (looped) should be 3000 pounds.

(2) The belt should be not less than 2 inches wide.

(3) The buckle should be so constructed that the belt end can be easily inserted and instantly released.

(4) The belt should be firmly anchored to the car frame, not to the seat. (Attachment may be made to the floor pan provided a large washer is used underneath the pan to prevent the bolt from pulling through.)

(5) Each person in the car should have an individual belt.

(6) In using the seat belt, the person should adjust the belt to obtain not over four inches slack for comfort with maximum protection.

It is well to purchase seat belts only from a reputable dealer to assure maximum quality.

NEED HELP? ?

Who doesn't? ? Well, before the solution to a tough operating problem, or the answer to a question, has you talking to yourself, send the trouble-maker to TE&M. We'll do our best to come up with the right answer.

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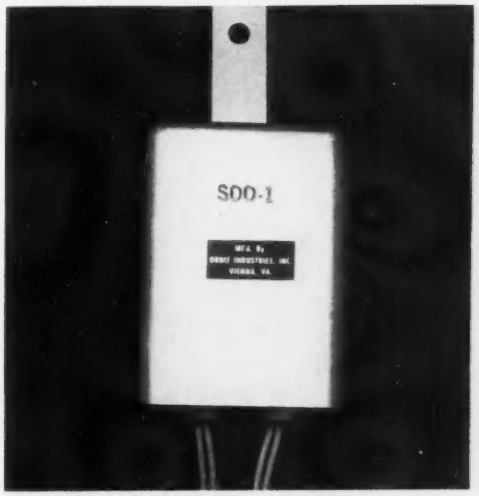

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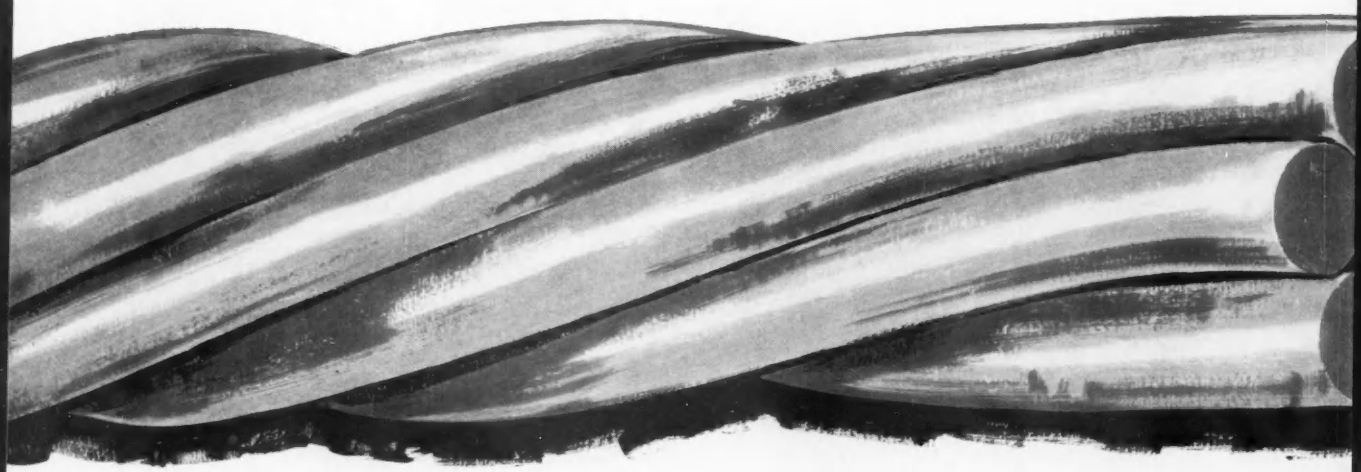

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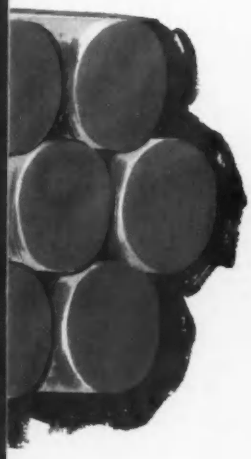

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50 YEARS AGO IN T E & M

■ The TE&M editorial reported *"There are* 22,971 *telephone systems operating in this country — but the total includes* 17,702 *farmer-owned r u r a l lines."* The editorial stated the 17,702 farmer-owned lines had 486,294 miles of wire, while the 5,269 operating companies had 12,513,075 miles of wire. The 17,702 farmer-owned lines had a total annual income of $1,783,458, while the 5,269 operating telephone companies had a total annual income of $184,461,747. *"Therefore,"* the editorial stated, *"77% of the systems have less than* 1% *of the total income of* $186,245,-205, *while* 23% *of the systems have over* 99% *of the total income . . . ."*

■ The Postal Telegraph Co. announced its entry into the telephone field, and said it planned to use trunk telegraph lines between Reno and San Francisco for telephone messages.

■ An Ohio manufacturer announced an indestructible cross-arm made of cement. The arm weighed 75 pounds!

■ The Perpetual Germ Proof Telephone Co., San Francisco, Calif., was incorporated with a capital stock of $70,000.

■ An article titled "Why Subscribers Lose Calls," by J. W. Hepner, stated *"A good way to cure some of those who are so sure they are losing important calls, is to keep ringing their bell every five or* 10 *minutes until you get a response . . ."*

call Graybar for new trouble-free Lynch "O" type carrier system. Plug in your new Lynch B-510 system—and operate. Your revenue begins at once! There's no field assembly . . . no field lineup. Your B-510 comes fully packaged, factory aligned, and easy to test with standard equipment. It's ready to "plug-in" and operate as soon as you get it. And it's fully compatible with the W. E. type "O". ■ Put a Lynch B-510 at your end of the toll circuit—step up to a trouble-free trunk system. For details, ask Graybar for Bulletin B-510. Better yet, have your Graybar man prepare a Transmission Line Survey for you. It's one more reason to call Graybar—for everything. Graybar Electric Co., Inc., 420 Lexington Avenue, New York 17, N. Y.

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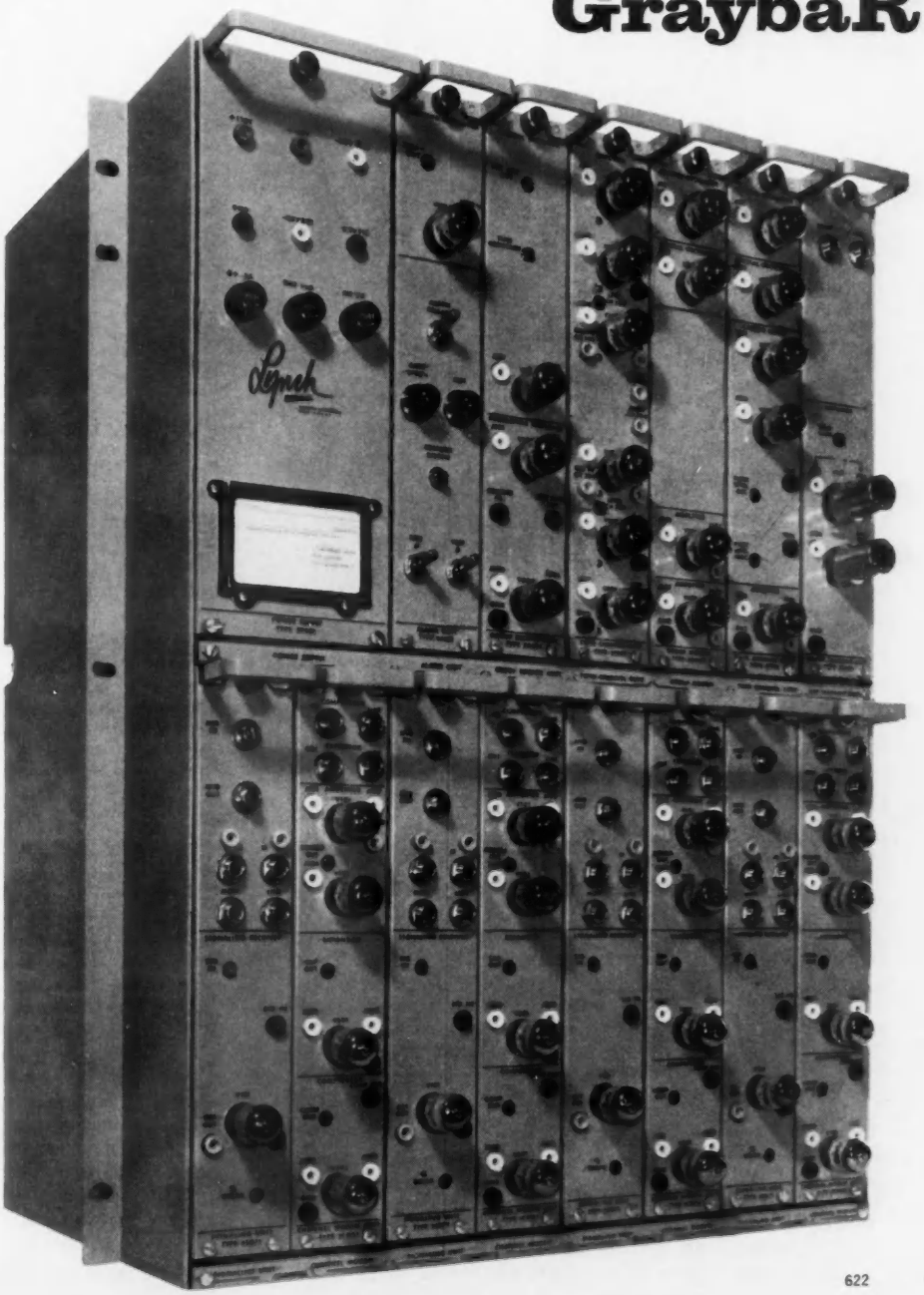

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The answer: Two microwave systems incorporating Stromberg-Carlson transistorized "561" Subscriber Carrier—engineered and manufactured by Stromberg-Carlson communications experts.

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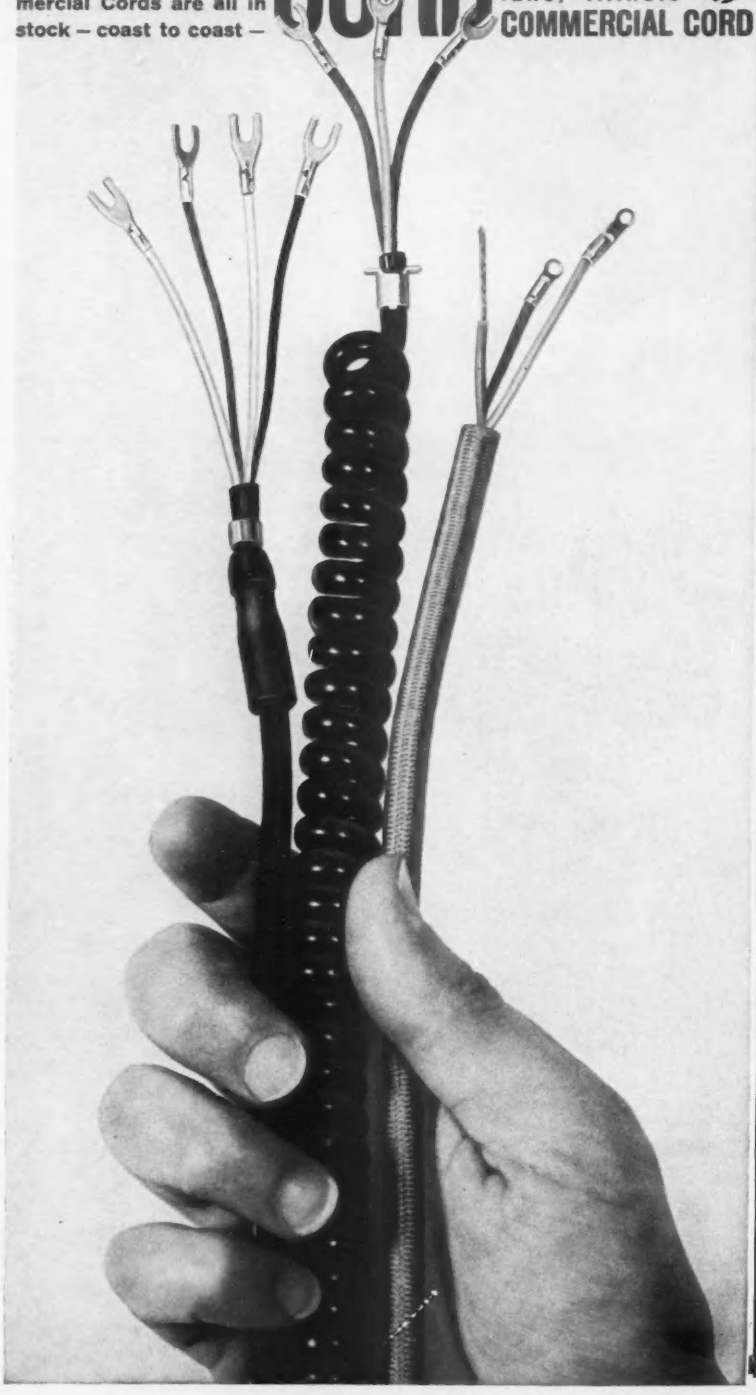

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MARLEX* conduit goes underground

Kansas Gas and Electric Co. finds non-corroding conduit of tough, lightweight MARLEX plastic promises longer, trouble-free service.

For their new underground primary distribution in growing Vickridge, a subdivision of Wichita, Kansas, KG&E approved 3-inch conduit made of MARLEX. The installation was made by Southwestern Electric Company. J. D. Green, chief engineer for Southwestern, says, "We installed some 6,000 feet of 3-inch MARLEX. Our comparative cost study shows MARLEX was installed at a 30% saving over the cost of asbestos cement conduit . . . 60% saving over galvanized steel. Naturally, we recommend the use of MARLEX conduit."

Large or small diameter, rigid or flexible—conduit made of MARLEX is lightweight and virtually indestructible. It is effortlessly handled without heavy equipment, economically shipped, and easily installed with butt-fusion joints, threaded or drive-on couplings. Ideal for underground installations of power and communication conduit . . . MARLEX resists acids, solvents, alkalies, bacteria, rot and corrosion . . . possesses excellent load-bearing strength, high dielectric, and a wide usable temperature range. Its smooth inner surface makes cable pulling easier and faster.

*MARLEX is a trademark for Phillips family of olefin polymers.

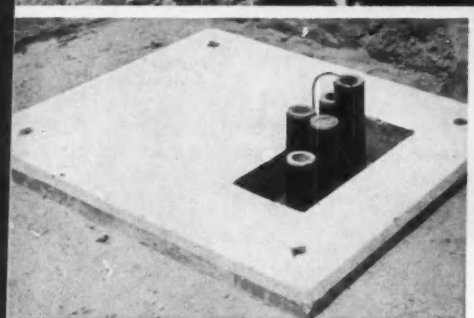

Photo shows conduit installed to transformer location . . . and (insert) finished concrete pad. System designed by W. W. Zook, Wichita, Kansas . . . Consulting Electrical Engineer to Vickridge Estates. Conduit: Triangle Conduit and Cable Co., Inc., New Brunswick, N. J.

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EDITORIAL

"Worth Thinking About"

IT TAKES nothing more or less than a quick review of the hundreds of reports on the operations of America's telephone companies to convince us that the telephone industry's growth and expansion problems will continue for many tomorrows.

With few exceptions, the forecasts given by the annual reports indicate the industry's plans for today and the future, calling, as they do, for new service achievements, will bring about an era of telephone growth that will demand the utmost from every man and woman in the industry.

That's why we think it would be wise to pause and consider another important and parallel problem which is not so apparent as the demand for more and better services, but is around and making itself known to some companies.

Briefly that problem concerns the *top men* of the telephone industry and the *steps they have taken*, or *not taken*, to provide for the day when they will retire and their responsibilities must be handed over to their successors.

In recent years a close companion of the telephone industry, the power utility group, became painfully aware of a similar problem. It started making itself known when many of the top men in the power industry reached retirement age, and in several cases the affected companies discovered they had no suitable replacements.

One of our friends among the power group tells us the problem had its beginning during the depression and the war years when relatively few people of executive and management caliber took positions with the power companies.

He also tells us that studies of the problem indicate that in many cases some companies had been lax in pushing the "juniors" up the line into positions of increasing responsibilities.

However, the depression, the war years, and the failure to advance qualified men to responsible positions were only three contributors to the power industry's problem.

Another causative agent showed up when a large power utility decided to discover why it was unable to hire engineers from its state university.

After some investigation, the utility discovered the university faculty was actually teaching that the power industry was "*old hat*" and that it failed to offer adequate opportunities to the newly graduated engineer.

Our informant tells us it took years of diligent work by the utility to convince the faculty members that the power field did, and does, offer excellent opportunities to the engineering graduates.

In view of the known experiences of the power industry, we think it is time for the telephone industry to take that pause we mentioned a few paragraphs back, and ask a few questions: —

(1) *Are the majority of the telephone operating companies "one-man" operations, or have the majority of the companies been able to change over to staff organizations?*

(2) *Does the industry attract its fair share of adequately trained personnel?*

(3) *How does the telephone industry rate with the faculty members of the various colleges and universities? Are they recommending that graduates consider employment with the companies making up the U. S. telephone industry?*

Those are only three questions we believe the members of the telephone industry should ask. We well know that each question will inspire other questions — and it is right that they should.

We say that, because we believe that out of the answers to the three questions, and the answers to the questions they will inspire, may well come programs aimed at (1) strengthening the management teams of the industry's operating companies; and (2) eliminating any possibility that the progress may be slowed by failure of the industry to attract men with the ability to manage the communication systems of tomorrow.

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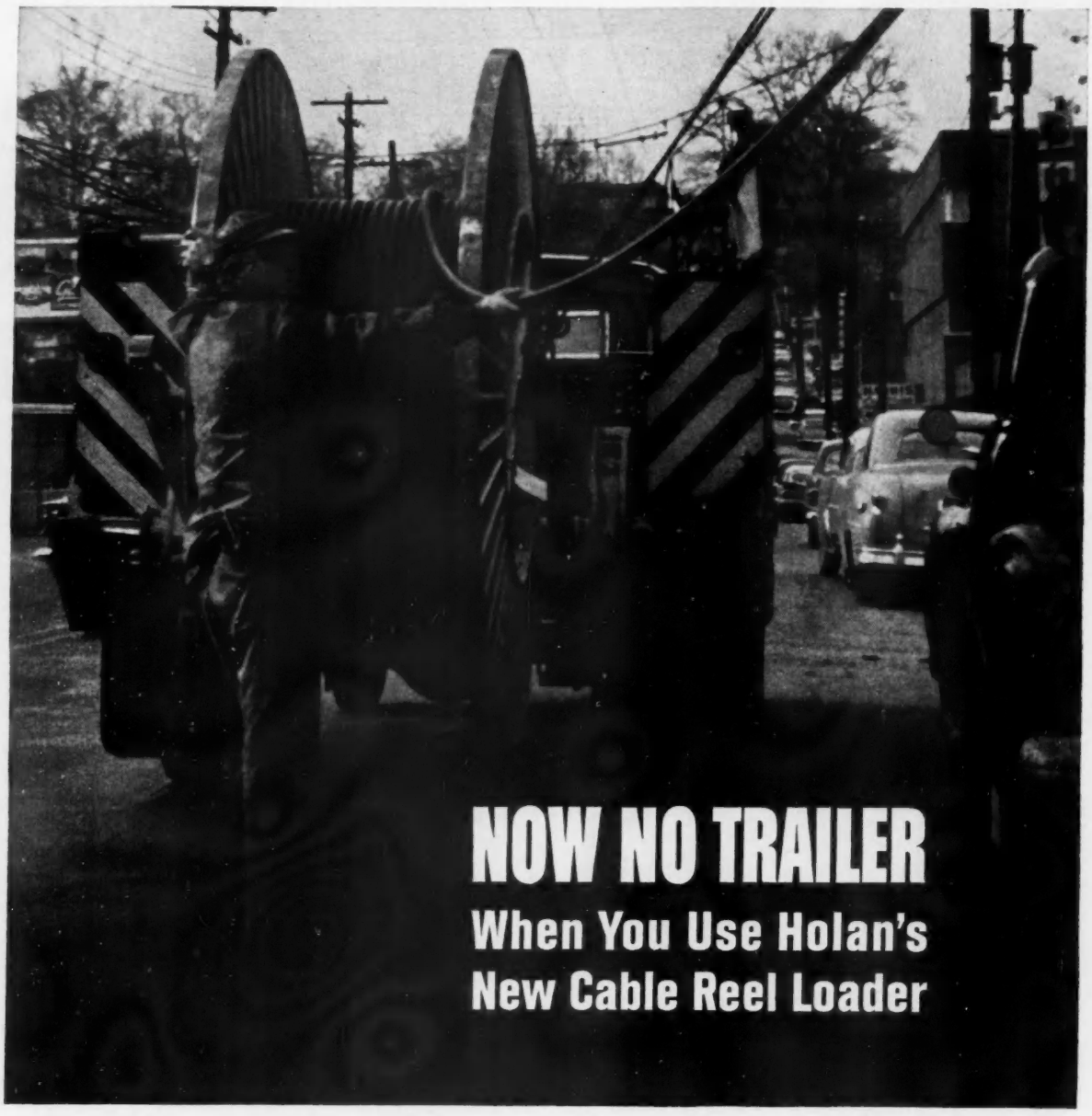

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Washington OBSERVATIONS

By ROLAND DAVIES and FRED HENCK

AT&T's recent signing of a contract with the National Aeronautics & Space Administration completes more than a half-year of discussions moving toward concrete and significant development in a new era in communications.

NASA Will Launch Spheres For AT&T Satellite Tests

THE FIRST practical application by private enterprise emerging from the intensive research and development in the space field during the past several years will be in satellite communications when the American Telephone & Telegraph Co. next year tests its own experimental system.

AT&T's recent signing of a contract with the National Aeronautics & Space Administration culminated more than a half-year of discussions moving toward a concrete and significant development in a new era in the history of telecommunications.

During the same week in which NASA and the AT&T signed their contract, some fears were being expressed in hearings on Capitol Hill that any company which would get into such a contractual arrangement with NASA might be placed in an advantageous position for the future in the space communications field, but government witnesses testifying before the House Interstate & Foreign Commerce Committee gave assurances that measures were being taken to avert such an eventuality.

And the conditions spelled out in the NASA-AT&T contract demonstrate that the government is taking what can be described as a "tough" position. Even though AT&T will be footing the bill for 1962, the requirements imposed by NASA in its contract for AT&T to share the knowledge it obtains from the tests and in regard to the question of patent rights distinctly demonstrate that the telephone company will certainly not be placed in an advantageous position.

NASA's announcement of the signing of the contract said that "Under the terms of the agreement, AT&T will design and build the satellite at its own expense and will reimburse NASA for the costs of the facilities and services which NASA will furnish in connection with the project. These will include Thor-Delta launch vehicles, launching and tracking facilities, and range and launch crew services. The satellites will be launched from Cape Canaveral, Fla.

"The agreement also calls for NASA to provide AT&T with telemetry and spacecraft acquisition information received by its Minitrack tracking network. AT&T will report to NASA the results of the communications experiments and significant information developed during evaluation of the experiments which may directly bear on other communications satellite programs. All experimental data and project results will be made available by NASA to the world scientific community."

Launching Scheduled For April & October 1962

THE company's satellites will be launched by NASA next April and October. Each launch will have a backup available, and if AT&T exercises its option for the backups, they will be launched in June and December. It was estimated by NASA that AT&T's cost of each launching reimbursable to the government will be in the area of $6,000,000. The direct cost of each launch will be in the neighborhood of $3,000,000 to $3,500,000, with the remainder defraying the government's costs in connection with the AT&T program at the Goddard Space Flight Center, including management expenses, and the expenses associated with the Minitrack network for the program.

AT&T is not being assessed any of the expenses of the government's overall space research program, but rather those additional or "incremental" costs to the government which would not be incurred without the AT&T experiment.

Under the terms of the contract, the government will receive a royalty-free license for all patentable inventions developed as a result of the experiment, and the NASA Administrator will have the right to issue royalty-free licenses to others on such terms as he may decide.

The patent terms, however, go beyond that and also cover any other Bell System patentable inventions during the period of the contract, not directly resulting from the satellite test, insofar as they may be used in satellite communications. Regarding such inventions, NASA will

have royalty-free patent rights, and may grant them to others, insofar as they may be used for satellite communications purposes.

The contract also covers anything either "conceived or reduced to practice" in satellite communications from May 18 to the end of the contract Dec. 15, 1962, the last backup launch date specified.

A NASA official, in discussing the award to AT&T, commented that at present the nation does not have enough experimental data to design an operational satellite communications system. He described AT&T as "most anxious" to launch a communications payload it has designed, and he declared that while some facets of the upcoming test are similar to those of the Project Relay program to be conducted also in 1962 by the Radio Corp. of America, which has been given the contract for the NASA-sponsored experiment, there are significant differences. Anyway, the official commented, the need to gather considerable amounts of data makes both experiments of great value.

The spherically-shaped satellites to be used in the AT&T experiment will weigh 125 pounds each. They will be launched into elliptical orbits approximately 600 miles from the earth at perigee and 3000 miles at apogee. Inclination to the equator will be 45 degrees. Their power supply will be solar cellers and nickel-cadmium storage batteries.

A Comprehensive Plan By October 13th

MEANWHILE, as the subject of space communications continued to occupy a large part of the attention of people in the field in Washington, the FCC — during the same week in which NASA announced the contract award to AT&T — gave the United States international telecommunications carriers until Friday, Oct. 13, to come up with a comprehensive plan for a commercial communications satellite joint venture to serve as a foundation stone for future FCC consideration of the subject.

In taking the action, the Commission spelled out the deadline, standards, eligibility, and overall procedural plans for the committee, and then left it up to the carriers as to how they will put the program together. Left to the discretion of the ad hoc committee of carriers, for example, was the extent and nature of participation by any other organization, private or governmental, the committee wishes to call in.

The Commission laid out the plan for the ad hoc committee at the same time it dismissed, largely on the grounds that they were premature, pending requests for reconsideration of the FCC's first report in the space communications policy docket filed by the General Electric Co. and the General Telephone & Electronics Corp. The FCC did conclude, however, that GT&E does not qualify as an international common carrier as the term was used in the first report.

Describing the General Electric and GT&E filings as misconstruing the nature of the first report, the Commission declared that its conclusion in that document was that it believed that "the recommendation made with respect to a joint venture of international common carriers was deserving of consideration and exploration as an effective means of promoting the orderly development and effectuation of a communications satellite system.

"However, the Commission recognized that additional information with respect to the organization and operation of any such joint venture was required before its feasibility and efficacy could be properly assessed, and that such information could best be afforded by the submission into the record of this proceeding of a concrete plan formulated by the interested common carriers."

Any proposal coming from the ad hoc committee of carriers, "together with all information and proposal supplied by (G.E. and GT&E) and others, will provide a basis upon which the Commission, consistent with the public interest and applicable legal procedures, will take such further action as may be necessary to achieve the expeditious establishment of a commercial satellite communications system," the FCC went on.

At that time, it continued, all interested parties will have a further chance to comment, and the arguments advanced by G. E. and GT&E on the merits of a system owned only by international common carriers "will be heard and carefully considered by the Commission." At present, the FCC declared, the two petitioners are not prejudiced "by deferring consideration of their arguments."

Standards laid down for the ad hoc committee followed closely the policy statement of the National Aeronautics & Space Council made public by President Kennedy the day before the FCC made its announcement.

In asking for the ad hoc committee's statement as soon as possible and no later than Oct. 13, the FCC said the statement should include "information on behalf of each participant as to the capital contributions it is committed to make to the joint venture, and the extent to which such participant or any of its corporate affiliates proposes or intends to furnish or offer to furnish to the joint venture any equipment, apparatus, supplies, or services of any kind.

"In addition . . . the statement shall include, on behalf of each participant who also owns, operates, or controls common carrier communication facilities used to furnish service between points within the continental United States, a full description of all policies and practices which such participant proposes to apply with respect to the interconnection of those facilities with the facilities of any inernational common carrier for rendering those services licensed or authorized by the Commission."

The national policy announced by President Kennedy — based on the recommendations of the Space Council — favors private ownership and operation of any satellite communications, established and operated under a set of specified policy requirements.

—Roland Davies, and Fred Henck.

PART THREE OF A SPECIAL REPORT

"Radiotelephone is perhaps the most natural extension of telephone service that can be imagined. Slip $35 in the slot each month—out comes area-wide communications."

"TALKING A MILE A MINUTE"

By HARLEY F. ROLFE
Vice President,
Communications Engineering, Inc.

System Requirements*

IT IS not the intent of this discussion to treat in any detail the various equipment offerings. However, the coverage would be less than complete if it did not discuss the areas required for fundamental planning. Let's review in more detail general system requirements plus each of the four areas used in the feasibility analysis.

(A) General System: — The first consideration of a general nature which must be established is the coverage area. The definition of the general area and or specific points to which a good signal must be delivered prescribes for the selection of all the other major and most costly radio items. Secondly, you must define what type of signalling you wish to employ, and here the prime consideration is compatability with Bell System? Do you want your radiotelephone subscriber to be able to get service from Bell while in its area? There is a third decision — manual or automatic operation — however I can't believe that there is much reason for concern over manual and have made this an assumption.

(B) Tower, Antenna and Range: — Tower height and antenna combine to add system gain measured in decibels (db). After defining the service area, the next step is to select the transmitter site. The controlling factors for range or coverage are:

(1) Height of antenna above ground.
(2) Gain of the transmitter antenna.
(3) R.F. power at the antenna.
(4) Gain of the receiver antenna.
(5) Sensitivity of the receiver.
(6) Noise level at the receiver location.
(7) Geography of the area (path characteristics).

Books have been written about the role of each of these elements. However, for our purposes let us say that you have control over four of the seven factors. Noise level and terrain are properties of your area and the receiver sensitivity of those to be in use are virtually constant. The selection of the remaining factors is simply a question of arranging the first four items in the most economical combination so as to provide sufficient system gain to do the job.

For some, the availability of a high elevation with power will provide sufficient gain to eliminate the necessity for adding further gain.

For others, use of all the tower height, high gain antennas, and transmitter power that the F. C. C. will allow is required. The selection of a particular tower narrows to a selection of guyed versus self-supporting which is controlled by availability of land for a guyed unit versus the differential cost of a self-supporting tower. Much work has been done in the past five years in antenna design with gains in the higher frequencies

**See the July 15 and August 1 issues of TE&M for Parts One and Two of this article.*

(150 and 450Mc) in the order of 6 to 10 db — the equivalent of doubling the tower height.

Where the terrain is rugged or the area large or irregular shaped and you must know that you will have coverage at specific points, a field survey is called for. The modest cost involved will provide assurance that the ultimate operation meets the needs of the people for which it was installed — thus insuring the feasibility of the system.

(C) Signalling Central Office Terminal: — The function of this unit is to act as "interpreter" between radio techniques on one side and telephone on the other. In general these terminals provide multi-party, selective ringing with 10 parties per line and accommodating any of the three types of ringing systems — decimonic, synchromonic, and harmonic.

Below are additional specialized features to watch for:

(1) Bell System Compatability[1] **—** allows your subscribers to use their equipment in Bell exchange areas.

(2) Operator Access Equipment[1] **—** allows any mobiles from outside your area to place calls in your area.

(3) Subscriber capacity — ranges from 30 to 100. Once capacity is reached a separate terminal, radio base station, and antenna system is required.

(4) Automatic ticketing — allows compatability with common types of automatic ticketing equipment to allow message unit rate structures and automatic toll ticketing.

(5) Reverting calls — allows vehicles operating on the same channel to call each other without use of telephone switchboard reverting equipment.

(D) Radio Base Station: — The basic unit normally comes in a 5-foot vertical cabinet incorporating 19″ racking, transmitter power of 50 watts, receiver, power supplies, control panel, metering — and meeting F. C. C. narrow band requirements. Half the rack space in such a unit is open allowing for the future addition of a second full equipment combination (second channel) or power amplifying units to be added without the addition of cabinetry. The transmitter and receiver should be rated for *continuous duty*. Some base stations used for dispatch-type service are rated for intermittent duty (EIA one minute on — four minutes off). Since your station will be transmitting for long periods, it must have a continuous duty rating. Further, it should be strapped for repeater operation (with all necessary F. C. C. required devices) to enable the reverting call operation among vehicles. Additional features which are available are:

(1) Remote Control: — Allows the radio base station to be located away from the switchboard at a more desirable antenna site and permits it to be connected by one or two wire line pairs to the signalling terminal in the switchboard room.

(2) Power Amplifier: — Allows power output of the transmitter to be increased from 50 watts to 250 or 330 watts — up to 8.4 db gain. Some units allow this addition to be made in the field.

(3) R.F. Cavity Filters: — Provides extreme selectivity for use where adjacent channels threaten to interfere with base station reception.

(4) Outdoor Cabinets: — For use where no additional space is required and outdoor pole mounting is desired.

(E) Radiotelephone mobile unit: — This is the heart of the system and the point where the most features obvious to the customer are apparent. The units usually mount in the trunk with the control head mounting on and under the dash. All units meet F. C. C. regulations for narrow band operation and utilize 25 watt transmitters. Beyond that there are a variety of features some of which are enumerated below:

(1) Dial operation for subscriber activation in placing calls.
(2) Push button operation for same purpose as above.
(3) Full duplex operation eliminates push-to-talk confusion and education for subscriber.
(4) Busy light to show channel availability.
(5) Front or trunk mounting for complete radio unit.
(6) Multichannel operation — up to 5.
(7) Stand by condition to reduce battery drain while engine is off.
(8) Heavy duty power supply to allow long telephone conversations rather than short intermittent dispatches without damage to the equipment.
(9) Lockout to prevent eavesdropping.
(10) Key-switch to allow subscriber to turn the darn thing off if he's taking a snooze.

This list is by no means complete as there are about 30 features available including control heads in color, dial lights a la the Princess, Petite, etc., horn relay kits, — most of which are standard equipment. The manufacturers have gone all out to apply the lessons of the merchandisers to the vehicle unit to make it a welcome addition to modern vehicular decor, and simple to use. They are to be complimented (and bought from).

Keep in mind that for each channel placed in service, a separate base station with and signaling terminal must be installed. Mobile units can and should have multichannel capability.

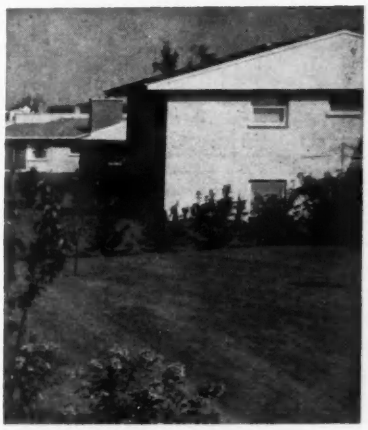
To Be Continued

IN THE NEXT INSTALLMENT

Part Four of Mr. Rolfe's article will discuss some interesting points about radiotelephone installations that are not related to the equipment, but to the nature of the service.

[1]*Main elements of radiotelephone standards adopted by USITA sub-committee findings.*

Here's how a combination of circumstances produces a problem for the corporation that has an REA telephone loan.



AN REA BORROWER'S PROBLEM

By BILL CORMAN

Mgr., Southland Tel. Co.
Atmore, Alabama

A COMBINATION of circumstances produces a problem for the corporation that has an REA loan which could become serious unless it is recognized by the company, and by the commission which has regulatory jurisdiction over the company. Co-ops which borrow from REA do not have the same problem, because federal income taxes are not involved in the co-op's profit and loss statement.

The circumstances which lead to this problem for the corporation are:

(1) The equalized repayment method utilized by REA: — Equal quarterly payments are made over the life of the loan, with the amount being applied to interest decreasing with each payment, and the amount being applied to principal increasing with each payment.

(2) The federal income tax, as it applies to corporations.

(3) The tendency of regulatory commissions to establish a "rate of return" which, applied to a "rate base," produces an allowable net profit.

Let me immediately add that I am quarreling with none of the above. I do not question that REA's repayment method is based on sound, practical reasons. I am not advocating that the federal income tax be abolished (at least not in this article). And I think that the formula "rate of return times rate base equals allowable profit" is as sound now as it ever was. It is not any one of the three that I want to talk about — it is the *combination* of them that produces the problem which I want to discuss.

An example is one way by which this problem can be made clear. So let us assume a small company has borrowed a million dollars from REA. Let's simplify the situation by further assuming that the balance sheet of the company has only two figures on it — $1,000,000 worth of telephone plant on the asset side, and a $1,000,000 loan from REA on the liability side.

A look at the million-dollar note we have signed with REA will tell us that we are expected to repay this million dollars in equal quarterly payments and at a rate of about $10.60 per $1,000 per quarter.

Thus, if we multiply 1,000 (thousands) times 4 (quarters) times $10.60, we get the total amount we must pay to REA each year, or $42,400. The note further tells us that this payment includes interest at the rate of 2 percent per annum. If we multiply 2 percent times $1,000,000, we find that our interest costs for the first year (disregarding the comparatively small effect of quarterly instead of annual payments) amount to $20,000. Thus — at least roughly — we can say that of our first annual payment to REA, about $20,000, was applied to interest, and about $22,400 to principal.

If we are to pay REA $42,400 each year, it is clear that the amounts each year used for interest will decrease, and the amounts applied to principal will increase, so that, if everything works out about right, the *last* payment to REA will include roughly $800 of interest, and $41,600 of principal repayment.

Next, let's build some profit and

loss statements, but backwards. That is, let's start with the net profit and work back to gross revenue, rather than the more normal way of doing it the other way around. To start off with, let's assume that all the net profit we need is enough to make the principal repayment on the REA loan. And let us construct two income statements, one for the first year of operation under the REA loan, and the second statement for the last year of operation under the loan. (*See Table One.*)

The problem (which this article is about) is now laid out before us, and it is the fact that the gross revenue requirement on the first year is only $155,200, while the requirement on the last year is $176,000, or an increase of $20,800. If you look closer, you will find that this entire difference is accounted for by the increased income tax (from $12,800 to $33,600), and that, therefore, our payments for everything else remained exactly the same — $100,000 other operating expense in *both* years, and $42,400 to REA in *both* years.

Furthermore (if you assume that we have used all our depreciation accruals to keep our plant in 100 percent condition) we have exactly the same rate of return for both of these years. In the first year we earned $42,400 on a $1,000,000. investment — or 4.2 percent and in the last year, we earned exactly the same amount.

And the problem, of course is, that in order to pay $100,000 in other operating expenses in each of the two years, and to pay $42,400 to REA in each of the two years, and to earn 4.2 percent in each of the two years, we had to have $21,500 *more* gross revenue during the last year than we had during the first.

Before I get called to task for some of the assumptions I have made in the above example, let me say that I realize the over-simplifications which I have used. For example, the over-simplified balance sheet, the constancy of the $100,000 annual operating expense figure, the assumption of maintaining plant in 100 percent condition, and so forth. But let me point out that the conversion of this example to more normal situations changes in no way the problem which I am trying to present. All that I have done is strip away complicating factors so that the problem stands out clearly.

TABLE ONE

	First Year	Last Year
Net Profit (required for principal repayment)	$ 22,400	$ 41,600
Add Income Tax (remember we are doing this backward)	12,800	33,600
Net Before Income Tax	35,200	75,200
Add Interest Expense	20,000	800
Net Before Interest and Income Tax	55,200	76,000
Add Operating Expenses (other than F.I.T. & interest)	100,000	100,000
Gross Revenue	$155,200	$176,000

TABLE TWO

	First Year	Second Year	Last Year
Gross Revenue	$155,200	$155,200	$155,200
Less Operating Expenses (excluding interest and F.I.T.)	100,000	100,000	100,000
Net Before Interest and Income Tax	55,200	55,200	55,200
Less Interest Expense	20,000	19,550	800
Net Before Income Tax	35,200	35,650	54,400
Less Income Tax	12,800	13,050	22,800
Net Profit (available for repayment of principal)	22,400	22,600	31,600
Actually required for principal repayment	22,400	22,850	41,600

TABLE THREE

	First Year	Second Year	Third Year	30th Year	31st Year	32nd or Last Year
Gross Revenue	165,000	165,000	165,000	165,000	165,000	165,000
Operating Expenses	100,000	100,000	100,000	100,000	100,000	100,000
Net Before Interest and Income Taxes (6.5%)	65,000	65,000	65,000	65,000	65,000	65,000
Interest Expense	20,000	19,550	19,090	2,450	1,640	800
Net Before Inc. Tax	45,000	45,450	45,910	62,550	63,360	64,200
Income Taxes	17,900	18,100	18,350	27,000	27,400	27,900
Net Profit	27,100	27,350	27,560	35,550	35,960	36,300
Required for Principal repayments	22,400	22,850	23,310	39,950	40,760	41,600
Over or Short	+ 4,700	+ 4,500	+ 4,250	− 4,400	− 4,800	− 5,300

While the above example presents the problem, it does not illustrate how that problem will show up in actual situations. By working backwards to arrive at a required amount of gross revenue, we have made the false assumption that each year we would have the gross revenue required for that year and, of course, this is not so.

A more normal assumption, and one more in line with the other assumptions, would be that the gross revenue would remain the same. For example, if we assume that operating expenses remain the same over the life of the loan, the other side of the coin would be that operating revenues would also remain fairly constant.

If we now make the further assumption that the regulatory commission establishes a set of rates based on the first year of operation during the life of the REA loan (and commissions normally set rates by looking at an actual year's operations), and if we build three profit and loss statements in the normal manner, the situation looks like the one presented in *Table Two.*

Another factor now comes to light, not only is this a serious problem, but also it is a sneaky problem. For not only, in the last year of the life of the loan do we come up $10,000 short of the cash we need for repayment of the loan, but also in the second year, we come up only $250 short — a figure not readily recognizable, particularly with all of the

Please turn to page 88

COMMERCIAL DEPARTMENT NOTES

By ALLAN R. STACEY
Vice Pres., Sunland-Tujunga Tel. Co., Sunland, Calif.

Better Cashier-Teller Facilities

"BETTER ALL-AROUND SERVICE"

Is your cashier-teller position doing the job it should? Here's how one company improved the position and (1) increased work efficiency; (2) provided money security; and (3) pleased bill-paying customers.

FOR SOME time we have been considering the installation of a new cashier-teller position to use in receiving payments from our subscribers who want to pay us in person. All of us agreed that the old position was inadequate but we were uncertain what to replace it with.

Upon careful examination we found a multitude of problems with the old teller's position. We had been using a standard office stenographer desk. The only reason it was a cashier's position and not a stenographer's location was that we had constructed and placed a very small shelf which could be used to count change on, or as a place for lady customers to lay their purses.

These were some of the problems with the old position: (1) The teller could not perform her work efficiently; (2) there was a lack of money security; (3) control of overflow of customers was difficult; (4) first appearance of the Business Office did not give a top quality impression to the public; and (5) the cashier was isolated and lacked good contact with service representatives.

The cashier was unable to work efficiently for several reasons. A small cash tray was kept in the upper right hand drawer and pulled out each time a customer came in to pay a bill, or the drawer was left open if there were a steady stream of customers. The location of this drawer required that the teller turn to her right to obtain change for each bill payment. Using the single desk as we were, children accompanying their parents, would often run around to the back and go on all sides of the desk and harrass the teller. The teller was required to use a manual hand stamping method to get a "paid" receipt on each bill form.

Cash security was a problem because with the use of an ordinary desk and the location of the cash box in the upper right hand drawer, any customer could see very readily how much money was in the box. As a matter of fact, this money was almost accessible to the public simply by a customer reaching a long arm over the desk and picking up the bills if the teller didn't happen to be looking.

Finally, there was poor provision for quick and immediate disposal of large currency that might come into the teller when she had no opportunity to leave the position or to call someone to her aid. The single cash position meant that at peak periods of the month it was difficult to handle an overflow of customers. A second cashiering position had been established but it was somewhat remote and it was difficult to route some of the customers to this second location.

The first impression to the customer walking into the Business Office was not top notch because the desk really didn't look like a cashier's position and often the customer was undecided where to go to pay his bill even though a small sign was placed on top of the desk. The problem was accentuated when we used the second desk because the customer then had to choose between two ordinary appearing business desks.

Since our cashier acted as a receptionist to guide people to other departments and other personnel of the company or to service representatives for assistance, she was not properly equipped to do this as she was without a telephone at the desk.

All in all it appeared we needed some changes.

Determining What We Needed

IT WAS obvious immediately that we needed equipment which would

answer the inadequacies outlined above. In addition, we needed to know what other people in our business had found to be the best methods of handling bill payments by customers in the business office.

One of the first things we did was to obtain and study the cashiering practices, written procedures, prepared by and used by other telephone companies. The second thing we did was to visit other telephone company business offices comparable to our own operation and see what they were doing. Then we set out to determine exactly what the load was on the cashier by taking an hourly peg count.

Reading and studying the practices of other companies was helpful but we learned more by visiting their offices. We saw several types of cashiering positions. For example, there was one type with two positions fully enclosed by floor-to-ceiling partitions and a complete lock-up system so that the employes were always secure. A glass partition stood between the cashier and the customer, with a small opening for making change. In this plan only office supervisors had keys to enter the cashiering enclosure.

A second style of position had a chest-high partition around three sides. This height required a stool for the cashier to sit upon. Others were desk height even though of counter length. In one instance we saw a scooped-out receptacle on top of the cashier counter in which the cashier deposited the coins to be given as change to the customer after payment of the bill.

We observed several different ways of handling bills of large denominations. In some cases the cashiers were required to immediately arrange for a supervisor to remove the large denomination bills. In other cases, a special locked drawer was available. In other cases, a slot was cut in the top of the counter and these large payment items dropped directly through that slot into a safe below.

In order that we could get a clear picture of what work was being done at the cashiering position, we ran a five-day peg count on the following types of work: (1) Payment in person; (2) night deposit payments; (3) mail payments posted; (4) payments without stubs; (5) routing of telephone calls; (6) routing of customers to business office personnel; and (7) routing of customers to company general office personnel.

This gave us an idea as to types of contacts being made, or work being

Two teller positions are contained in a 10-foot long, 7-foot wide arrangement featuring a two-level counter.

Inside view of cashiering position. It includes 11 drawers including one combination and key safe

processed. In order to have some information about peak load times of the day, we ran a daily peg count by hours for about two weeks. This showed us the number of contacts of all types per hour and pointed up peak hours.

What We Wound Up With

WE FINALLY decided upon two teller positions contained in a 10-foot long, 7-foot wide arrangement. This stood about 42 inches high and had the room wall as the back side. (*See Illustrations*). Notice the two-level counter. The top level takes the change as the cashier gives it to the customer while the lower level counter holds the customer's purse or other belongings. You will observe that we decided to use chair seating behind the counter, and the counter top at 42 inches easily accommodates this type of operation. The woodwork is of a walnut finish with a sand beige top.

Now look at the photo and you will see the inside of the cashiering position. It contains 11 drawers, including one combination and key safe. Looking at the picture to the left of the cashier, you will notice there is a pushbutton telephone available for the cashier to route incoming calls to service representatives or to inform company personnel of visitors desiring to see them. You will see that the cashier's tray rests at an angle, and is sufficiently indented under the counter top so that a customer is unable to see what is in the tray. Trays for each position are designated by "A" or "B" as you can notice in the second position not being used. These trays have a lock top and each cashier controls her own cash.

You will observe there are electrical outlets along the counter top for posting machines. In the illustration we have used a calculating machine, but we are buying a validating and receipting machine. Incidentally, the telephone is on a cord arrangement which permits it to be moved easily from one position to the next, and it is intended that only one cashier will operate the telephone. You will observe

"Off The Board"

Communications Securities

Markets as of July 27, 1961	DIVIDEND	BID	ASKED	LAST SALE
American Tel. & Tel. Co.	$3.60			124¼
Anglo-Canadian Tel. Co. (Br. Col. Dom. Rep.)	1.20	44½	46½	
Bell Tel. Co. of Canada	2.20			52¼
British Columbia Tel. Co.	2.20	48¼	49¼	
California Interstate Tel. Co.	.70	22	23	
California Water & Tel. Co.	1.36	38½	39½	
Calif. Pac. Util. Co. (Calif., Ore., Nev.)	.90	22½	23½	
Carolina Tel. & Tel. Co.	1.60	46½	—	
Central Tel. Co. (Minn., Ia., N. C.)	.88	28	29	
Chenango & Unadilla Tel. (N. Y.)	1.20	26	—	
Cincinnati & Suburban Tel. Co.	4.50	108	110	
Citizens Util. Co. (Calif., Pa.) "A"	stk. only	27¾	29	
Citizens Util. Co. (Calif., Pa.) "B"	.60	25½	27	
Commonwealth Tel. Co. (Pa.)	1.00	25½	27	
Florida Tel. Co.	1.00	28	29¼	
General Tel. & Electronics Corp.	.76			26⅜
Hawaiian Tel. Co.	1.08	17¾	18¾	
Independent Tel. Co.	none	8¾	9¾	
Indiana Tel. Co.	.50	33	—	
Inter-County Tel. & Tel. Co. (Fla.)	.72+stk	27	28½	
Inter-Mountain Tel. Co. (Va., Tenn.)	.80	20	21	
International Tel. & Tel. Corp.	1.00			56⅝
Jamestown Tel. Corp. (N. Y.)	6.00	88	—	
LaCrosse Tel. Corp.	.80	16	—	
Lincoln Tel. & Tel. Co. (Neb.)	2.60	66½	—	
Lorain Tel. Co. (Ohio)	1.40	34½	—	
Middle States Tel. Co. (Ill.)	.92	33	35	
Mountain States Tel. & Tel. (Ariz., Colo., Mont., Tex.)	.90			29⅞
New England Tel. & Tel.	1.72			47⅞
North Carolina Tel. Co.	none	1⅛	1⅝	
Northern Ohio Tel. Co.	2.00	67	—	
Pacific Tel. & Tel. Co.	1.14			41¾
Peoples Tel. Corp. (Pa.)	4.00	21	—	
Pioneer Tel. Co. (Minn.)	1.00+stk	36	—	
Rochester Tel. Corp (N. Y.)	1.00			27⅝
Southeastern Tel. Co. (Fla.)	1.00	23	25	
Southern Nevada Tel. Co.	1.20	40	42	
Southern New England Tel. Co.	2.20	50½	51½	
Southwestern States Tel. Co.	1.28	30½	—	
Telephone Service Co. of Ohio "A"	.36	25	26	
Telephone Service Co. of Ohio "B"	.36	33	—	
Tidewater Tel. Co. (Va.)	1.40	27	—	
United Utilities, Inc.	.80	24⅞	25⅞	
Virginia Tel. & Tel. Co.	1.00	22	—	
West Coast Tel. Co. (Wash., Ore., Calif.)	1.36	33¼	34¼	
Western Carolina Tel. Co.	.40	55	57	
Western Power & Gas Co.	1.20	25	26	
Western Union Telegraph Co.	1.40			44½
Western Utilities Corp.	.36	12½	13¼	
Western Light & Tel. Co., Inc. (Mo., Kans., Ia.)	2.40	30¾	31¾	

(Source of Market — DEAN WITTER & CO.)

MODEL GP-4010F, List 1 Illustrated

Shelf-Ette®

Attractive lines plus sturdy construction - - You get both in the elegant SHELF-ETTE by Gladwin.

Stylish design and limited wall area required are sure to make a hit with your customers. It's easy to keep clean too. The writing shelf and backboard are covered with a high-pressure laminated plastic.

The Gladwin SHELF-ETTE is shipped knocked down and can be installed with very little effort. This knock down feature makes an increase to mulitple arrangements easy . . . so easy that one person can do the job.

This is only one of the many products manufactured by Gladwin for the telephone industry. Write for a complete catalog, free of charge.

GLADWIN PLASTICS, INC.
165 COURTLAND ST., N. E.
ATLANTA 3, GEORGIA • JA 5-5384

that all drawers can be locked, and all records are kept under lock and key.

How It Works

LET'S see how this arrangement works. As shown on page 48 the customer presents the bill to the teller. The teller separates the bill into two portions and places the customer's stub and the commercial stub into the posting machine. The teller then enters the amount into the machine, depresses the validating bar, which indicates a "paid" symbol, a teller's identification a transaction number, date paid and machine number on both stubs. This machine number is different between companies and between all machines, and in this way we can trace any stub that is presented to a particular machine and thus to a given teller. The transaction number is in consecutive numbering pattern and thus helps us to identify what part of the day the transaction occurred.

The machine carries a total as it goes along and this total is locked in and cannot be removed except by a supervisor's key. It is possible for two girls to share one machine and activate an identification slug to identify which girl is posting on the machine at a particular moment. The machine will carry two totals so that a relief teller can have her own total.

One problem we found after getting into operation was routing the customers to the cashiering position. We solved this by placing a rubber mat leading from the commercial office door to the cashiering position.

Prices for this type of equipment vary radically, of course, but to give you some idea as to what was involved for us, the two-position counter arrangement cost approximately $1,000. The drawers underneath the cashiering position as shown on page 48, including the safe combination, cost approximately $550. The cash boxes cost approximately $30 each and the posting and validating machine was about $1,000.

Well, that's all for now. Next issue we'll talk about telephone operations in one of our newest states. See you then — *Allan R .Stacey.*

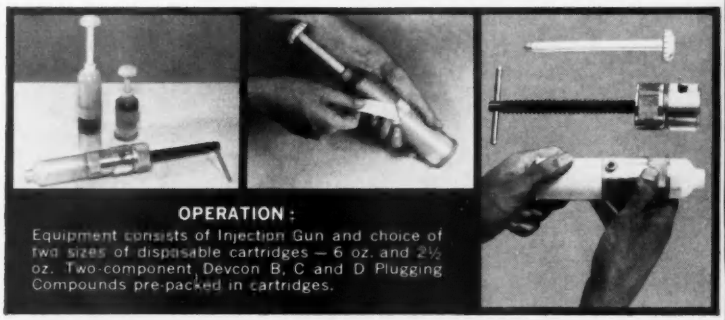
IMPROVED DISPOSABLE CARTRIDGE METHOD

STOPS CABLE PLUGGING PROBLEMS

Safe · Quick · Easy · No Cleaning
No Skin Contact
Use B, C or D Compounds

Save time in mixing epoxy resin and activator. Eliminate any cleaning of gun. B COMPOUND is recommended specifically for plastic insulated cable; C COMPOUND is especially made for paper insulated lead sheath cable; all-around D COMPOUND will suit *either* application. All three resins are available in 6 and 2½ ounce cartridges. The LD-755 Gun has a lifetime warranty.

Devcon Corporation, Danvers, Massachusetts



OPERATION:
Equipment consists of Injection Gun and choice of two sizes of disposable cartridges — 6 oz. and 2½ oz. Two-component Devcon B, C and D Plugging Compounds pre-packed in cartridges.

1. Remove tape clinch band from cartridge.
2. Rotate dasher rod until material is completely mixed.
3. Remove dasher rod and insert cartridge in Injection Gun for application.
4. Attach fitting to cable and eject resin.
5. Remove cartridge from gun and discard.

Patent No. 2,838,210 (others pending)

The next time you order, SAVE TIME, SAVE CONFUSION

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CALL US COLLECT, PLEASE!

Send me complete instructions and prices.

Name _____

Company _____

Address _____

City _____ **Zone** ___ **State** ___

PLANT ENGINEERING NOTES

By JOHN S. REED
Technical Editor, TELEPHONE ENGINEER & MANAGEMENT

Graphite Anodes Prevent Sheath Corrosion

NEW IDEAS AT WORK

Insertion of short, graphite anodes in a spare duct of the cable-carrying conduit system minimizes corrosion of underground lead-covered cable . . . Pocket-size tester detects presence of dangerous gas . . . Multiple directory racks hold four to seven large binders containing several directories.

CORROSION of underground lead-covered cable can be minimized by the application of cathodic protection. Methods have been devised to provide this protection, such as the use of a large single anode bed or a number of small individual anodes at spaced intervals near the underground conduit.

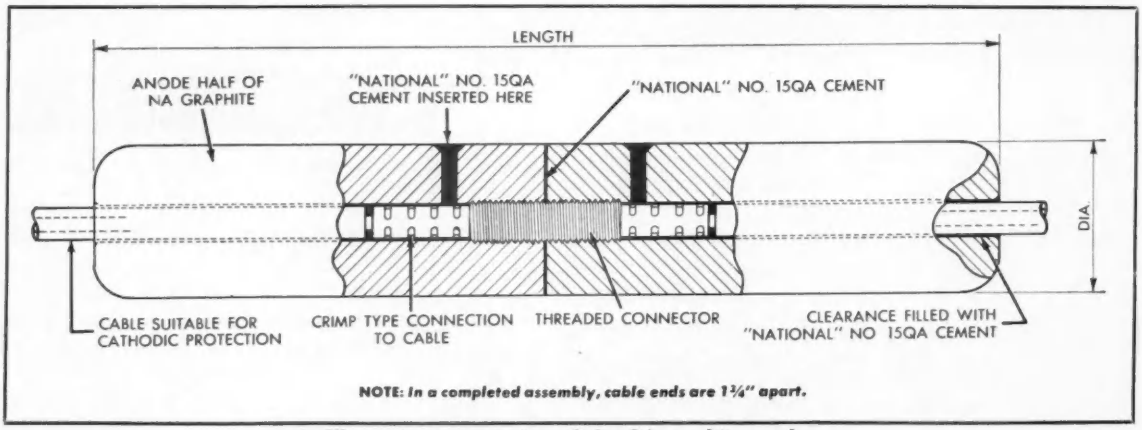
Experience of telephone companies with cathodic protection systems for underground cables indicates that the most satisfactory results are obtained by inserting short graphite anodes in a spare duct of the conduit system carrying the cables. At the same time there is practically no interfering effect in adjacent foreign underground structures from the presence of the anodes in their vicinity.

Graphite anodes are available in three general size classes: 12″ x 2″ dia., 20″ x 2″ dia., and 30″ x 3″ dia. The 12″ x 2″ dia. anode (see illustration) is considered the most suitable size for telephone conduit systems, since it will pass through conduit bends in the installation procedure.

The anode is a graphite rod with a hole drilled through the center, slightly larger than the diameter of a No. 4 7-strand copper wire. The rod is cut in two and the center of each half is threaded for one inch for a crimp type cable connector. Each half of the rod is provided with compound-filling holes 3/16 inch in diameter located 1 1/4 inches from the center end.

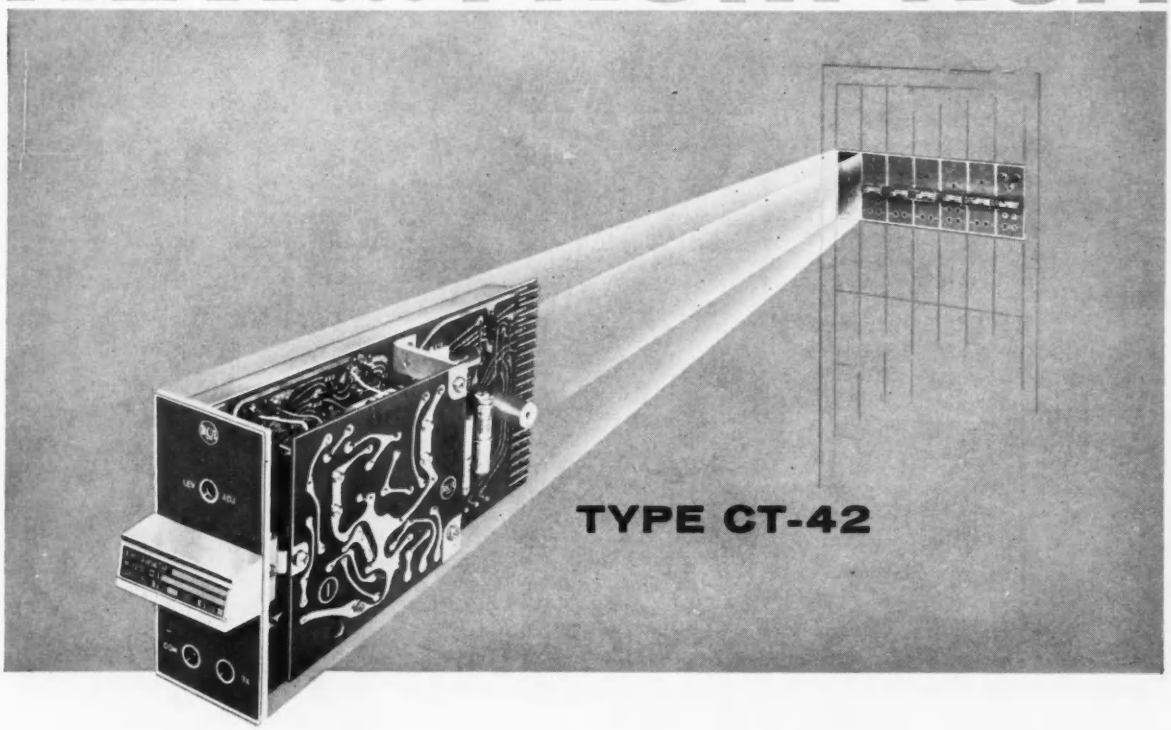
The anode halves are assembled in the following manner:

(a) Each half is placed on the wire with the centers facing. (Several may be strung at one time if desired.)


LENGTH
ANODE HALF OF NA GRAPHITE
"NATIONAL" NO. 15QA CEMENT INSERTED HERE
"NATIONAL" NO. 15QA CEMENT
DIA
CABLE SUITABLE FOR CATHODIC PROTECTION
CRIMP TYPE CONNECTION TO CABLE
THREADED CONNECTOR
CLEARANCE FILLED WITH "NATIONAL" NO 15QA CEMENT
NOTE: In a completed assembly, cable ends are 1¼" apart.

Illustrating construction of the QA graphite anode.

NEW... FROM RCA



SOLID STATE TONE MULTIPLEX

FOR WIRELINE, MICROWAVE OR CARRIER

24 channels from 420 to 3180 cps—Spaced every 120 cycles (CCITT Standards)
18 channels from 4300 to 7600 cps—Spaced 170 to 220 cycles

The CT-42 is an all new tone multiplex of high performance designed to operate over a wide environmental range. Ruggedly built, it uses computer grade components for lasting dependability.

Each channel can be frequency-shift or AM keyed for teletype, telemetering, control or data signals. Six transmitters or receivers in any combination may be plugged into a standard shelf which also contains a husky regulated power supply.

Channel units operate from 24 V DC or 117 V AC power supply.

If you are looking for the newest and best in tone multiplex equipment, mail the convenient coupon for complete specifications and prices.

RCA
The Most Trusted Name in Electronics
RADIO CORPORATION OF AMERICA

RADIO CORPORATION OF AMERICA
Microwave Equipment, Dept. YC-430
Building 15-5, Camden 2, N.J.

☐ Please send new catalog sheet and price list on Type CT-42 Tone Equipment.

NAME_____ TITLE_____
COMPANY_____
ADDRESS_____
CITY_____ ZONE_____ STATE_____

(b) The wire is cut at the point of the center of the rod location, and the ends are cleaned, placed in the special connector and crimped.

(c) The center faces of the two halves are painted with a special cement (National #15QA resin base cement). The two halves are then screwed together, and the cement provides a perfect seal.

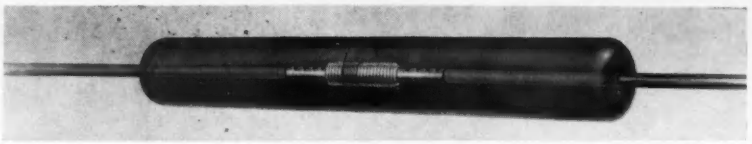
(d) The compound is forced into the compound filling holes with an applicator. This forcing is continued until the compound appears at the far end of each half.

In tensile strength tests, the stranded wire breaks before damaging the assembly. This type of connection is said to be less susceptible to moisture deterioration than a taped splice.

It is possible to string a number of the graphite anodes at spaced intervals with the stranded copper wire connected to the rectifier unit supplying the cathodic protection current.

The accompanying *Table One* lists sizes of anodes available for duct use and their specifications. The anodes are also available installed on the stranded wire at the factory.

The need for the use of duct anodes has greatly increased since the disappearance of trolley systems and many electric railroads. Before this, proper use of drainage wires to substations had minimized or masked the effects of local corrosion on underground cable.



Type QA graphite anode for cathodic protection of underground cable sheath. (National Carbon Co.)

TABLE ONE

Assembled Size		7 Strand Cable	Recommended Maximum Current Per Anode — Amperes		
			Soil with	Suspended	Suspended
Diam.	Length	Size	Backfill	in Fresh Water	in Salt Water
2″	12″	4	.54	.14	8.0
2″	12″	6	.54	.14	8.0
2″	12″	8	.54	.14	8.0
2″	20″	4	.90	.23	13.3
2″	20″	6	.90	.23	13.3
2″	20″	8	.90	.23	13.3
3″	30″	4	2.0	0.5	30
3″	30″	6	2.0	0.5	30
3″	30″	8	2.0	0.5	30

New Gas Tester Features Small Size

COMPANIES with underground conduit systems in towns have long been aware that conduit ducts and manholes can accumulate dangerous gases. These companies make use of detector equipment to check manholes for the presence of gas before they are entered. It is obviously important to ventilate the manholes every time before attempting entry and while they are being worked in, but it is also essential to know if gas is present and to what extent. If properly carried out, gas detection tests will also reveal pockets where gas has accumulated and will indicate if the gas is still seeping into the manhole, usually through the ducts.

Gas detectors are becoming simpler and more compact. A recent development along these lines is a combustible gas analyzer. This is a lightweight, pocket-size unit of rugged construction that weighs 2 pounds and measures 3″ x 5¾″ x 2¼″ in size. It is capable of operating for 40 hours from a self-contained battery of compact size.

A single knob is employed for turning on the analyzer and adjusting the meter. A pilot light indicates when the set is turned on and at the same time lights the meter scale. An aspirator bulb can be plugged into either side of the meter for right or left hand use. A 5-foot sampling hose is inserted in the opposite side for introducing the gas and air mixture into the analyzing chamber. A compact leather case is provided to store the instrument along with the aspirator bulb, sampling hose and probe, spare battery and analyzer filament, and a screwdriver.

Showing appearance of new Bantam Vapotester used in detecting the presence of dangerous gas mixtures. (Davis Emergency Equipment Co.)

Method of using Bantam Vapotester in check of manhole atmosphere.

To use, the bulb and hose are plugged into the instrument and the probe is inserted through the manhole cover for the preliminary check. The meter knob is turned to adjust the pointer to near the zero mark. The aspirator bulb is squeezed several times to expel air from the analyzer chamber. The knob is then turned to set the meter on zero.

The aspirator bulb is again

BELIEVE it or not, USS Amertel telephone wire has been known to stretch enough under severe icing to actually touch the ground without breaking or disrupting service. And when the ice melted, the wire went back to almost its original stringing sag. All USS Tiger Brand Amertel telephone wires have strength to spare. In heavy loading areas you can span up to 200 feet with Amertel 85, 350 feet with Amertel 135, and 600 feet with Amertel 195. This means fewer poles, faster installation, and lower costs. Grade for grade, Amertel's voice transmission efficiency is the highest. The physical and electrical characteristics of Amertel 195 give it a transmission efficiency higher than any other galvanized steel telephone wire. The heavy zinc coating on Amertel gives greater corrosion resistance and lower maintenance costs. For your next job, check the advantages of using USS Tiger Brand Amertel. Write American Steel and Wire, Dept. 1213, Rockefeller Building, Cleveland 13, Ohio.

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American Steel and Wire Division of United States Steel

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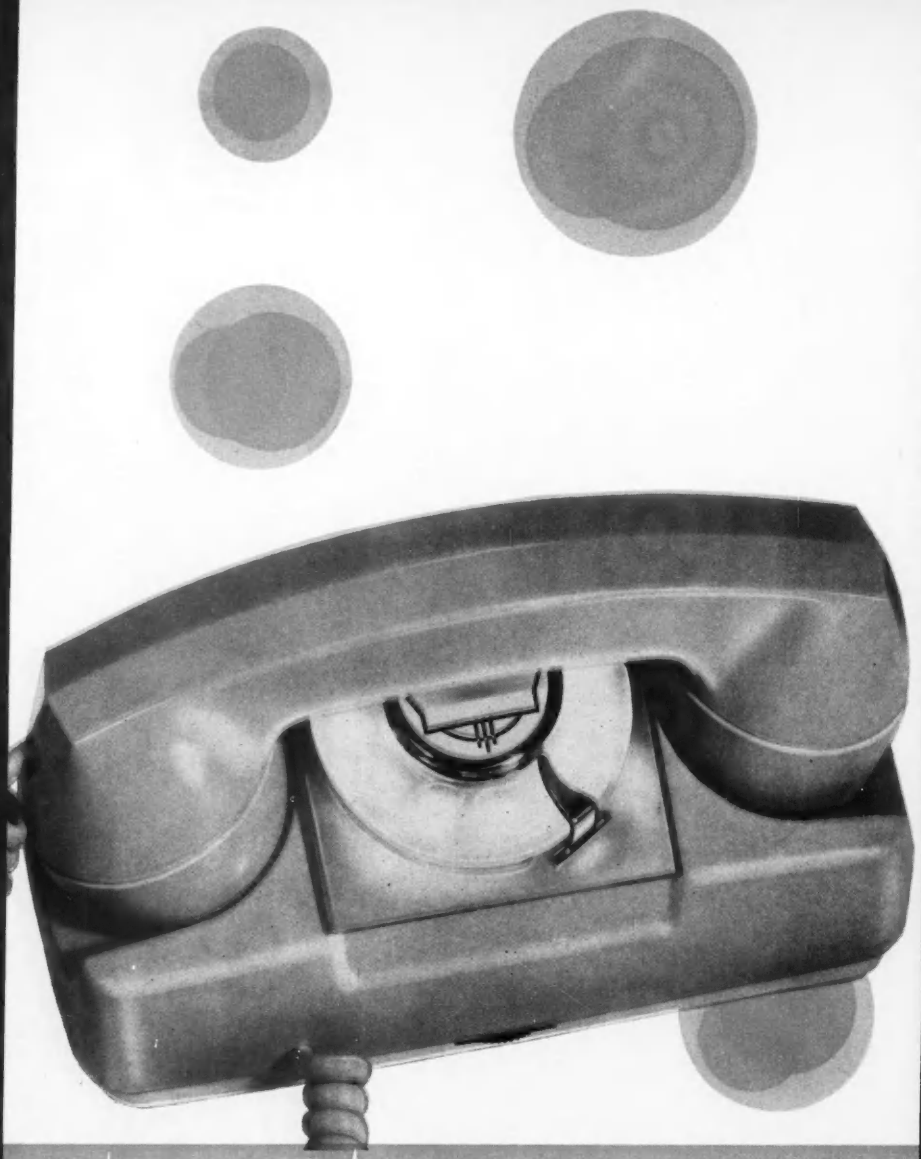
Tennessee Coal and Iron Division, Fairfield, Ala., Southern Distributors
United States Steel Export Company, Distributors Abroad



the STARLITE telephone

Dial light shines years longer. Only Starlite has electroluminescent light... the lighting of the future. No bulb to burn out and replace every few months. And the dial light can be turned from soft to bright, or completely off, any time. Your subscriber chooses just the amount of light he wants.

Original design. It's smartly rectangular and less than half the size of a regular phone. Six sparkling colors: white, ivory, beige, pink, blue, turquoise.

Holds its place in use. Only Starlite has a rubberized cork pad covering the base. New soft-pull handset cord.

UL Listed. Starlite meets all the requirements of Underwriters' Laboratories. It's your assurance of Starlite's complete reliability.

Main station or ringing extension. Starlite can be either one with our new miniature ringer box. It's only 5¼″ x 5¼″ x 2⅛″ deep. Available in all six Starlite colors.

helps you sell more extensions...

Starlite helps you put extensions in more homes. It's the phone that puts more $$$'s in your revenue. Easy to order. Just write Automatic Electric Sales Corporation, Northlake, Illinois

AUTOMATIC ELECTRIC

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GENERAL TELEPHONE & ELECTRONICS

*Trademark of Automatic Electric Company

ASK FOR YOUR FREE STARLITE SALES KIT

Promote the Starlite in your area with the help of this big Sales Kit. Contains newspaper ad mat, envelope stuffer, display posters, commercials, publicity release and mat, display ideas, promotion guide. Write for your copy.

squeezed repeatedly to draw the manhole atmosphere into the analyzing chamber. If a combustible mixture is present it will burn along the surface of a heated filament inside the chamber. This raises the filament temperature still further, upsetting the balance of a resistance network and causing additional current to flow in the meter circuit. The meter scale is graduated to the percentage of the lower explosive limit. A red "danger" line indicates that an explosive mixture is present.

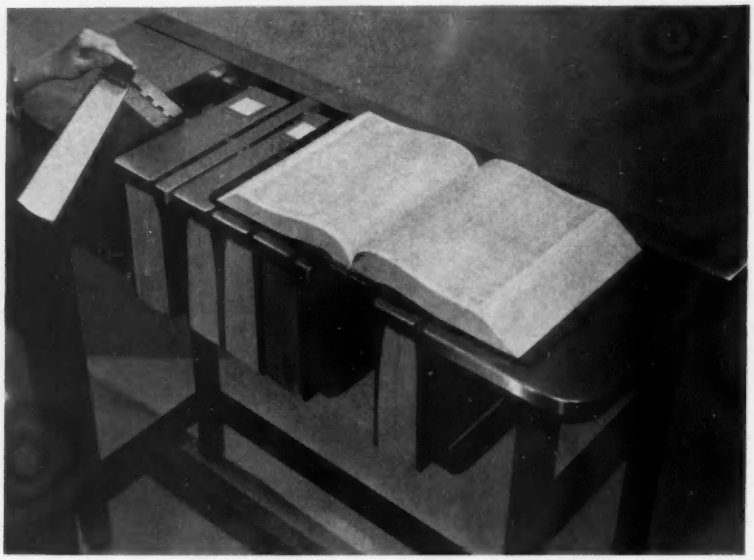
The manhole is thoroughly ventilated before entry is permitted. Even then, various parts of the manhole are "probed" to detect pockets of gas and points of gas seepage into the manhole. Continuous ventilation is maintained during the tests inside the manhole and after the desired work is started in the underground chamber. However, if continuous gas seepage is detected, no further work is attempted and the gas company is notified so that the leak can be located and repaired.

An important precaution to observe when using the hot wire gas detector is not to operate the detector in an atmosphere containing mixtures of oxygen with hydrogen or acetylene This precaution is so indicated on the instrument case.

Directory Racks Facilitate Ready Reference

AS A service to the public, telephone companies provide a location, usually in the business office, where telephone users may consult directories from other cities. This reference service is especially popular with business men who wish to obtain phone numbers and addresses of firms in other towns that they want to do business with.

Directory racks of the kind illustrated above would be especially handy in the case of directories referred to quite frequently. Such racks are primarily intended for public telephone locations in large towns, but they may also be used for out-of-town directories in hotel locations where salesmen may want to consult them for out-of-town calls. Multiple directory racks are also becoming popular for use at major airports to provide directory facilities encompassing all major cities in the United States.



Seven-binder telephone directory rack. (Pressed & Welded Steel Products.)

As the illustration indicates, the rack mounts bookholders or binders on a horizontal, centrally located pivot rod passed from side to side through their backs. This assembly is supported in an enclosure so that the binders hang in a uniform row and individually pivot through a half circle. In use one end of a binder is lifted causing it to revolve around the pivot rod. This brings it up over adjacent binders and allows it to open for the user to consult the directory.

It provides a quick method of referring to a group of standard telephone directories, and is said to prolong directory life ten times or more at busy locations.

The directory rack is available in shelf or table models to accommodate four to seven large binders, each capable of containing several directories. The entire rack is steel welded, and the top surface including binder supports is 18 gauge satin finish stainless steel. The underside is furnished in black wrinkle enamel.

The binders will hold one or more directories 11″ x 9¼″ in size or smaller. They are available in 2-inch, 2½-inch, and 3-inch thickness, and have hinged Masonite side covers. A title card holder is located behind a flush mounted plastic window in each directory.

New Registry Of Radio Systems

1961 REGISTERY of Transportation Radio Systems: 88 pages, 8½ by 11 in., price $4.00: edited by Ethel V. Sleeper. Published by Communication Engineering Book Co., Monterey, Mass.

Listings in this 16th edition include main station, mobile, and microwave transmitters operated by:

	Main stations	Mobile
Automobile Emergency Service	1,112	9,508
Railroads	3,271	97,874
Taxicabs	5,384	98,287
Trucks & Buses	2,182	41,265

Part 1 lists the systems by names and addresses of the licensees, showing the locations of control points, frequencies, call letters, number of mobile units authorized, and make of equipment used.

Part 2 lists the systems by operating frequencies, an extremely valuable feature because it shows the assignments to each channel.

The 1961 edition has been completely revised from FCC records, by permission of the Commission. It shows the changes, additions, and deletions made during the past year.

the telephone notebook

How well do you know your customer?? This report on A.T. & T.'s Residence Market Survey provides a definitive portrait of the home customer, and an equally critical portrait of telephone selling effort.

HOW WELL do you know your home customers? Sure, you know that nice Mrs. Jones who comes into the business office each month to pay her bill and always stops to chat. And you know Mr. Smith, he's a leading light in the local Rotary. But just how well do you know your home customers, their likes and preferences. With the urban and suburban population explosion it's pretty hard today to maintain the old grass roots contact with customers so that you'll know just what they do like and want in telephone equipment and service, and just how well you're filling these needs.

THIS IS YOUR CUSTOMER

The A.T. & T.'s Resident Market Survey provides a definitive portrait of the home customer, and an equally critical portrait of selling effort. The study is based on 7,441 adult questionnaires, and was a cross-section of all Bell System urban residence customers. The field work was done during May, 1960. Let's take a look at the results.

The Market for Extensions

TODAY, nearly 10 million Bell customers have extensions or an average of 1.35 telephones per customer. 22,400,000 have one telephone, 8,300,000 have two telephones, 1,000,000 have three telephones and 300,000 have four or more telephones.

During the decade immediately after the war, Bell System residence extension development increased from 6% in 1945 to 16% in 1955. And in the last five years this extension development has ballooned until it has about doubled both in number, and per cent of main telephones.

The Bell System has been installing between two and three million extensions each year for an annual net gain of about one million. Yet, the survey shows that 6 million additional customers have some interest in having additional telephones installed. 600,000 say they "will get one soon," and the other 5,400,000 say they "will probably get one sometime."

Still others who do not consider themselves extension prospects look on extensions as desirable to have. Fully 6% of the System's customers or some 1,900,000 consider

an extension a necessity while another 39% or 12,500,000 consider it a convenience. A sizeable number of customers consider two and three extensions as a convenience or a necessity.

While a vast number of customers consider an extension important, even essential, customers without extensions have very little knowledge of what an extension really costs. In 1955, 43 per cent of the Bell System's one-telephone customers couldn't tell what the estimated monthly extension charge amounted to. While customers are more familiar with extension costs than they were in 1955, still there was only a 2 per cent improvement in 1960.

Who Are The Hottest Extension Prospects?

WHO ARE these customers who are most interested in extensions. Well, they are: All your customers!

■ Recently the Southern New England Tel. & Tel. Co. relating the AT&T findings to its own section of the country, learned that 346,650 New England customers with one telephone are interested in extensions; 28,350 New England customers with two telephones are interested in extensions; and, hold your hats — 18,900 New England customers with three or more telephones are also interested in extensions. If these customers had been sold just one extension New England Tel. & Tel. would have realized approximately $435,000 in additional revenue!

■ Once upon a time the hottest extensions sales prospects lived in large private homes, but this is no longer true. Today, customers in all sizes and types of homes — even apartments — are likely extension prospects.

■ Another change in thinking took place as far as class of service. Now 2-and 4-party service customers also show a great deal of interest in getting an extension. 19% of the private-line customers in New England, or 166,400, are interested in extensions; 18% of the two-party customers, or some 199,900, are prospective extension owners, as are 15 per cent of the 4-party customers, or another 50,650 customers.

■ Those families that have many users and members making calls daily seem to be most interested in getting extensions.

■ Age seems to be the most significant factor in extension development. Younger families have shown a greater increase than older families during the past five years in both extension development and in interest in getting additional telephones.

■ Families that move frequently show the greatest interest in extensions. These people are the ones reached most often through regular contact.

How Big Is Your Color Market?

BACK in 1955 only 3% of the System's customers had color telephones. Today some 8,300,000 or 28% of Bell System customers have color telephones, for an average of 1.3 sets apiece. And more customers are showing interest in color. About one customer in four said he'd be interested in getting a color telephone — or another color telephone. This represents 1,600,000 more customers expressing interest in color than in extensions.

Who Are Your Likeliest Color Customers?

PRETTY much the same kind of customers as are interested in extensions. In the past a higher per-

"FATS" Program Keeps Inventory Slim

■ General Tel. Co. of California's Field Assembly of Telephone Sets (FATS) program, which got under way this year is earning plaudits from customers and Nabormen in three pilot districts using Naborman component parts vans, it was announced recently by Assistant Vice President - Supply & Transportation R. E. Ward. Palisades-Malibu, North Long Beach and Baldwin Park received 53 of the new white vans in April.

Component parts vans contain sufficient telephone parts to enable Nabormen to do 91% of their instrument assembly work (FATS) right in front of the customer's house. Each truck is equipped with an optimum one-day working supply of component parts. Nabormen use these parts to assemble all phone sets required for service order and maintenance reasons at work locations.

Ward outlined several reasons for implementing FATS.

"Twenty years ago, and also prior to that time, we purchased our telephones as complete instruments. There was nothing wrong with this since we only had one type of telephone and only one color to work with — black," said Ward. "But in 1959 we adopted the full-color program for desk and wall type telephones.

"Prior to the full-color program, its was necessary for the company to stock 12 black telephones to satisfy any possible service order an installer would be required to work. This figure, because of the full-color program, jumped to 132. That is, we required 132 telephones in stock in order to satisfy any service a customer might request. With a truck stock investment in parts equivalent to 20 telephones, we can accomplish the same objective that would require 240 complete telephones."

It was soon realized that high inventory costs could be reduced by parts and implementing the FATS program, which would also lead to improved customer service and more revenue for the company.

centage of customers with extensions and one-party service were interested in color. Today, the different groups show about the same interest.

In New England 23% of the customers with one telephone or 362,400 customers were interested in color, 24% of the customers with two telephones, or 56,700 customers, and 25% of the customers with three or more telephones, are interested in color telephones. If these customers were sold just one telephone in color the increase in revenue would amount to 3½ million dollars!

As in the case of extensions, the type of dwelling, number of floors and size seem to have very little influence on interest in color. There is a slight tendency however, for customers in larger homes to be more interested. Again, high users, younger families, and mobile families showed the greatest interest in color.

The Right Telephone In The Right Place

THE location pattern for telephones has been undergoing a real change. There is an increasing trend for telephones to be in the specific areas where the housewife spends a good deal of her time and away from the more traditional or central locations.

On the increase are telephones in kitchens, bedrooms and basements. On the decrease are telephones in the living and dining rooms. Even in homes where there is only one telephone there has been a considerable shift away from the more traditional or central locations, particularly the living and dining rooms.

Basements are becoming popular extension locations. Five years ago there were indications of increasing interest among customers in getting a basement extension; today almost two-thirds of the customers with basements who have three or more telephones have an extension in their basement.

This growing interest in having a telephone in specific activity or living areas greatly enlarges extension sales opportunities. Many customers expressed the desire to have telephones in the bedroom, kitchen, basement, or den when they were asked where they would have a telephone if they did not consider cost at all.

The wall telephone has great popularity particularly in the kitchen and basement. In fact, in the past five years the number of wall sets has increased substantially from 7% of all customers to 26%.

As this study was done prior to widespread introduction of the Princess Phone, the impact of the Princess on location, etc., is not known.

The most popular location for a color telephone is the kitchen closely followed by the bedroom, then the hall, living room, and dining room share equal measures of popularity. Least popular locations are the den and basement.

The most popular colors are the neutrals—white, beige and ivory. White is particularly popular in the wall telephone, and yellow is considerably more popular in the wall telephone than in the desk telephone. White leads in the kitchen and bedroom with beige second. In all other rooms beige comes first except in the basement where red comes first. After the neutrals, yellow is most popular in the kitchen, pink in the bedroom and living room; green in the hall, den and basement; grey in the dining room and red in the basement.

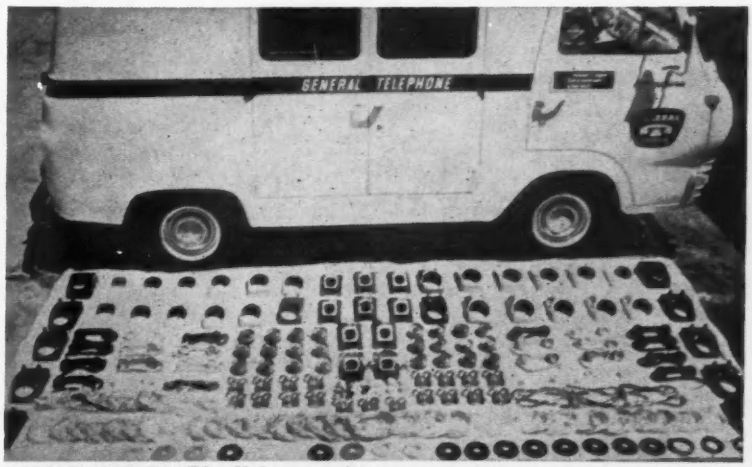
What is most important from a future sales point of

Here's how FATS works: Every Naborman's van is restocked daily to the pre-established stock level of an optimum day's work load. The Naborman's truck contains parts which will satisfy any customer request, enabling him to fill the order right at the customer's doorstep without delay. It will also make possible rapid servicing of orders received at the business office.

"Since the Naborman will have all possible types and colors of telephones on a truck, he will attempt to sell colored phones instead of black. He will also try to sell more extensions, colored or black, since he knows he can match any color ordered by the customer. This can be done without the need of a second trip," Ward added.

Component parts vans provide adequate compartment space and work area to perform delicate assembly and repair of telephone apparatus at the customer's premises.

"Inventory costs will be reduced tremendously thanks to FATS," Ward continued. "Also foremen will not be required to make deliveries. Phones will be where they should be — right at the customer's door. Without getting into detail, it's safe to say that the Company will save about $1,000,000 in inventory costs thanks to Naborman component parts vans and FATS."



COMPONENT PARTS—Nabormen driving new white vans in three pilot districts are implementing FATS program. These component parts enable Nabormen to do 91% of their instrument assembly work right in front of the customer's house. Each truck is equipped with an optimum one-day supply.
—(Courtesy Gen. Tel. Co. of Calif. "News.")

view, one out of seven customers who have black telephones are dissatisfied with the color, while relatively few customers with color telephones are dissatisfied with the color. The two rooms where customers are particularly critical of their black telephones are the bedroom and kitchen.

The Indictment

HOW well are customers being sold? Let's take a look. About 8 million customers, the survey shows, moved in the last two years. Another 10 million made some changes in their telephone equipment in the last year or two. They either added an extension, upgraded their service, changed to color, changed the type of phone or moved it (inside). Combining these two groups, the Bell System had "prime" sales opportunities involving close to 15,000,000 customers or nearly half of all its customers. Furthermore, the System has had contact with even more — these are customers who entered a business office to pay bills or for some other reason, or who have had repair contacts from Installers.

How good a selling job has been done? Let's let the customers tell us. While two-thirds of all customers recall contacts with the company in the last year or two, less than one-third recall sales suggestions of any kind. Of those recalling sales suggestions, 68% said the employe casually suggested additional service or equipment; 18% said the employe urged them to get it; and 6% said he high-pressured them. Thus only one customer in seven, who recalled contacts, recalled more than a casual sales effort!

Going a step further, according to what customers remember, they received many more sales suggestions from the Business Office than from Plant: 47% remembered a Business Office representative making a sales suggestion on an order contact, and another 30% recalled a Business Office representative making a sales suggestion on other contacts. But only 15% remembered an installer making a sales suggestion, and only 13% remembered a repairman making a sales suggestion.

Finally, customers were asked "if someone from the Telephone Company tried to sell you additional service or equipment now, how interested would you be in hearing what that person had to say?" One in three indicated he would be willing to listen to a sales suggestion.

Your Best Prospect

There you have it. The customer—who is the hottest prospect for extension and color sales talk is young, a big telephone user, a frequent mover, with any grade of telephone service and any number of telephones, and living in anything from a two-story home to an apartment. He likes color and wants his color telephones located in specific activity or living areas. And what is most important, he's easily contacted, and is waiting to be asked to buy. *—Adapted from "Sales," published by New England Tel. & Tel. Co.*

"Safety Corner"

Working Safely From Ladders

■ It takes nothing more than a careful review of accident reports for any year, any month, or any week, to prove that in addition to accidental falls from ladders, numerous injuries are caused by the careless use of ladders, such as: (a) improper carrying, raising and and lowering; (b) tools and materials falling from ladder steps; and (c) central office ladders pushed into contact with other people.

So, for the next few issues, TE&M's new "Safety Corner" will pass along a few "Ladder Safety" suggestions that are helping other companies end accidents involving employes and ladders.

Safe Use Of Ladders In General

(1)—Ladders and ladder ropes shall be inspected visually each time before using. Never use a ladder with any parts broken, decayed, loose, crushed or badly worn, or a ladder which shows any evidence of weakness on a test

(2)—Ladders shall be kept clean and free from dirt, paraffin, paint, grease or any substance that would cause insecure hand hold or footing.

(3)—Avoid dropping a ladder or otherwise subjecting it to undue strain which may impair the strength of the ladder.

(4)—Avoid placing ladders in front of elevator doors and doorways, near passage-ways or moving machinery, such as overhead cranes or conveyors. When it becomes an absolute necessity to place ladders at these locations, take extra precautions such as either locking the door or tying it open. In some cases it may be necessary to have the ladder guarded by another person.

(5)—When ladders are used in locations where there is a possibility of interference from street traffic or pedestrian traffic, the ladder shall be well guarded.

(6)—Be alert when carrying ladders so that people and objects are not struck with the ladder.

(7)—Do not place ladders on boxes, barrels, truck bodies, etc. for additional height; procure a ladder of sufficient length to complete the work.

(8)—Always face the ladder when ascending or descending and be sure that you have free use of both hands. Take one step at a time, do not rush.

(9)—Be careful that tools and material, when used, are not dropped from the ladder. Avoid leaving tools, material or test equipment lying on steps or hanging from ladders.

Extension Ladders

(1)—Secure footing of a ladder is a *must*. If the surface on which the ladder feet rests is such that the ladder may slip, tie or brace the base securely. If this cannot be done, it may be necessary to have another workman

hold the ladder. In this case the safety of the workman, while he is on the ladder, rests in the hands of the man holding the ladder.

(2)—Both feet of a ladder should be on the same level. If necessary, remove earth from beneath the high side to bring it to the level of the low side or use the wooden ladder wedge to level the ladder footing. No other means of leveling the ladder footing shall be employed. A properly placed ladder does not lean to the right or left.

(3)—To secure the proper angle, the base of the ladder should be placed so that the distance from the base of the ladder to a line dropped vertically from the top support is approximately ¼ of the length of the ladder measured from the top support to the bottom support.

(4)—Before placing a ladder against suspension strand, the workman shall throw a handline over the strand at a point where the ladder is to be used and gradually apply his weight to the strand by grasping the two ends of the handline and lifting himself slowly off the ground. Strand that will withstand this test without showing any signs of failure will have ample strength to support the ladder and the workman.

(5)—Whenever an extension ladder of *any* size is being raised to or lowered from suspension strand, a handline shall be used. This handline serves the dual purpose of providing a strand test and ensures against the ladder falling as it is being raised, worked on or lowered. When two men are available to raise or lower a ladder, the handline is still used.

(6)—Whenever possible, ladders used on strand should be placed from the field side in order to avoid danger from passing vehicles.

(7)—When working on suspension strand or cable from an extension ladder equipped with ladder hooks, pass the safety strap around the strand and cable above the top rung of the ladder.

(8)—When working on suspension strand or cable from a ladder *not* equipped with ladder hooks, pass the safety strap around both side rails of the ladder and the strand and cable or around the strand and cable between the side rails and rungs. Make certain that the safety strap is always passed around the strand and never around the ladder alone.

(9)—Ladders, not equipped with strand hooks, when erected to the cable strand shall extend two rungs above strand. They shall be securely lashed to the strand.

(10)—Where the top rung rests against a tree trunk or similar object, lash the ladder securely to prevent it from twisting.

(11)—Do not place ladders against wooden posts, uprights, etc., the wood in such structures may be rotted or in an otherwise unsafe condition.

(12)—Do not place a ladder inside an angle formed by wires, where loosening of the wire attachments might cause the ladder to slip and fall.

(13)—When climbing ladders, it is good practice to grasp the side rails. *Do not* slide your hands along the side rails when climbing or descending.

(14)—Keep hands clear of rungs and side rail guides when raising or lowering extension ladders. Keep feet clear when ladder is raised or lowered.

(15)—Ladder locks shall be visually inspected for proper seating and the end of the rope shall be securely tied to a rung in the lower section before a workman shall ascend the ladder.

(16)—Do not climb a ladder while wearing climbers.

(17)—While on a ladder, do not attempt to lean so that any part of your body (except arms or hands) extends more than 12 inches beyond the side rail. When the work cannot be done without overreaching, the ladder shall be moved to the proper location.

(18)—Do not stand *above* the fourth rung from the top of an extension ladder. Secure a longer ladder if necessary.

(19)—Never try to shift this type of ladder while standing on it.

(20)—Only one person shall be on a ladder at any one time. Where a ladder is tied to a suspension strand in a span supporting a splicer's platform, no one shall climb such a ladder if two men are working on the platform.

(21)—If both hands are required to work from a ladder, more secure support may be obtained by passing one leg through the rungs of the ladder.

(22)—Use a handline to raise or lower bulky material so that both hands are free when climbing and descending a ladder. Never throw tools or material to a person on a ladder or from a ladder to the ground.

(23)—When getting off a ladder, avoid stepping on loose stones or debris or into a depression. If practicable

The Really Important Person

■ He's the hardest guy in the world to please. If you don't do a good job, he'll get someone who can. And his decision is final.

He always lets you know what he wants. He'll decide what kind of work you do — and how much of it you do.

He'll decide how much you get paid — but he's willing to pay you what you're worth to him.

He's always looking for new talents and new things — but he's loyal to old stand-bys, too.

You might able to fool him for a while — but don't count on being able to get away with anything for very long.

But he never has any trouble getting people to work for him, tough as he is.

You've got to admit that he makes jobs for an awful lot of people.

If you know what's good for you, you'll work your head off to satisfy him. Your whole future is pretty much in his hands.

Who is he? He's your customer! He's the real boss of every employe of every business everywhere. Your future success is in his hands. Actually, he's the biggest shot of all! Because he expects the best, he looks for and obtains the best — just as you do when you're the customer! — (*Reprinted from "Southeast General News.*)

clear the ground at the base before climbing. In any event, watch your step.

(24)—Extension ladders shall never be carried from one position to another while extended, but should first be lowered and then extended again at the new location.

(25)—Erected ladders accessible to the public shall never be left unattended.

(26)—In general, an extension ladder should not be left on the job overnight. *In no case shall an extension ladder be left lashed to a strand overnight.*

(27)—Generally, when an extension ladder is carried on a workman's shoulder, the ladder should be carried at an angle, if possible, with the base of the ladder toward the ground.

(28)—Men should be particularly aware of the unwieldiness of extension ladders and shall exercise the utmost caution in carrying and erecting them to avoid contact with other persons, automobiles, windows, wires, power wires and other obstructions.

(29)—Ladders shall be securely fastened to the motor vehicle during transportation. Ladders shall be removed from vehicles in such a way as not to come in contact with approaching traffic or persons.

(30)—The maximum working length of an extension ladder, depending upon the minimum overlap, is from three to four feet less than the ladder size. The following table shows the maximum working length of standard extension ladders.

Size of Ladder (feet)	Maximum Working Length (feet)	Minimum Overlap (feet)
20	17	3
24	21	3
28	25	3
32	29	3
36	32	4
40	36	4
44	40	4

(31)—Always use the proper length of ladder for the job. *Under no conditions* shall two extension ladders be spliced or lashed together in order to improve a means of obtaining additional height.

(32)—Plant practice requires that the supervisor shall inspect all ladders used by his forces at least every two months, and shall see that the workmen comply with all the instructions contained therein.

(33)—Where there is any doubt about the ladder being safe to use, tag it "return for test" and exchange it for one in good condition. ***(To be continued)***

Who Killed George Dey?

■ The excitement and enthusiasm that George Dey brought to the job the day he came to work for the Telephone Company was a sight to behold. It was hard to tell which of his emotions, his eagerness to do a good job or his excitement about working for a giant corporation, was showing the most.

And work he did. He listened carefully, absorbed everything he could, did his job the best way he knew how, and really tried to learn. Nothing was hard for him as he rode on a crest of excitement that made every day and every new task an adventure. He looked at things with the fresh view of someone new to the business and the ideas started coming. "Why don't we . . .," "Have they ever tried . . .," "I bet we could save if we . . .," the suggestions kept coming. And someone in exasperation finally said, "George, why don't you keep quiet and learn to do things the way they're supposed to be done before you start trying to change the world!" George was crestfallen. He only wanted to help. O. K., if that's the way they wanted it, he would keep quiet.

But he wasn't going to be discouraged. George was going to be the best employe that ever was, he resolved. He was going to make the people in his department proud of him. He was going to have everyone in the outfit glad to have him on the team. He was going to earn a name for himself as a fellow who really knew his job and wasn't afraid of hard work. That's what he was going to do, and he did. And then one day someone said to him, "Aw, come on, George, what are you trying to kill it for? What are you doing, trying to make the rest of us look bad? I mean . . . you know, George . . . Who are you trying to impress?"

George was confused. "Maybe I was wrong," he thought. Maybe he was working too hard. He didn't want the others to dislike him. So he shrugged his shoulders and said to himself, "I guess you can't fight city hall . . .," whatever that means.

If George was discouraged, even a little bit, he certainly didn't show it when he talked about the Company with friends and relatives. He was proud of the equipment and his co-workers and the service they both gave. Selling was the most natural thing in the world as far as he was concerned, and whenever the conversation turned to the telephone (as it often did when people heard he was with the Company) he made it a point to let people know about the new equipment and new services that were available. And when people had a question or an unfavorable opinion about the Company he tried to talk it over and see if he could straighten it out for them. At least he did for a while. That ended one night at a party attended by two other telephone people.

He was explaining the free calling area in answer to a misunderstanding, when one of the other telephone people (it might have been his girl friend who also worked for the Company) said, "Oh, for Heaven's sake, George, why don't you put your soapbox away. All you ever talk about is the Telephone Company. Who cares what the free calling area is, anyway . . ."

Well, that's about how George Dey died. It took a few more of this kind of incident, but not really too many as you look back on them. Oh, he's still walking around, all right. You'll find him dragging through the day, doing the best he can, but it's not much fun anymore. Every-

thing seems much harder now. You'll find him at meetings saying things like, "Well, we got along doing it the old way," or "I don't think it can be done," or "Were you speaking to me?" or "I don't have any opinion . . ." And sometimes you'll see him talking to a new employe, saying something like, "Why don't you keep quiet and learn to do things the way they're supposed to be done before you start trying to change the world?"

There are some who say George died of unknown causes. There are others who suspect that he was murdered. What do you think? Who killed George Dey?

The name, George Dey, is fictitious and does not refer to any real person living or dead.) (*Reprinted from Pacific Tel. Magazine.*")

Talking Like Computers—In Code

■ Last month housewives, businessmen and teenagers at Newark, N. J., didn't know it, but on July 25 they began talking over the telephone in the language of computers — a mathematical code of high-speed electronic pulses.

The callers were unaware, as they talked with people in nearby Passaic, that an experimental system being tried out by Bell Telephone Laboratories in cooperation with the New Jersey Bell Telephone Company, was "slicing" up their voices and translating the slices into a code.

Only this coded signal – not the usual "voices" – went over the wires. At the far end of the line, the system took the coded signals, rebuilt them into voices, and delivered them sounding the same as ever.

This method of carrying voices in ordinary telephone conversations is perhaps the most radical departure yet seen from the electrical "model" that carried Alexander Graham Bell's historic message. "Mr. Watson, come here. . . !"

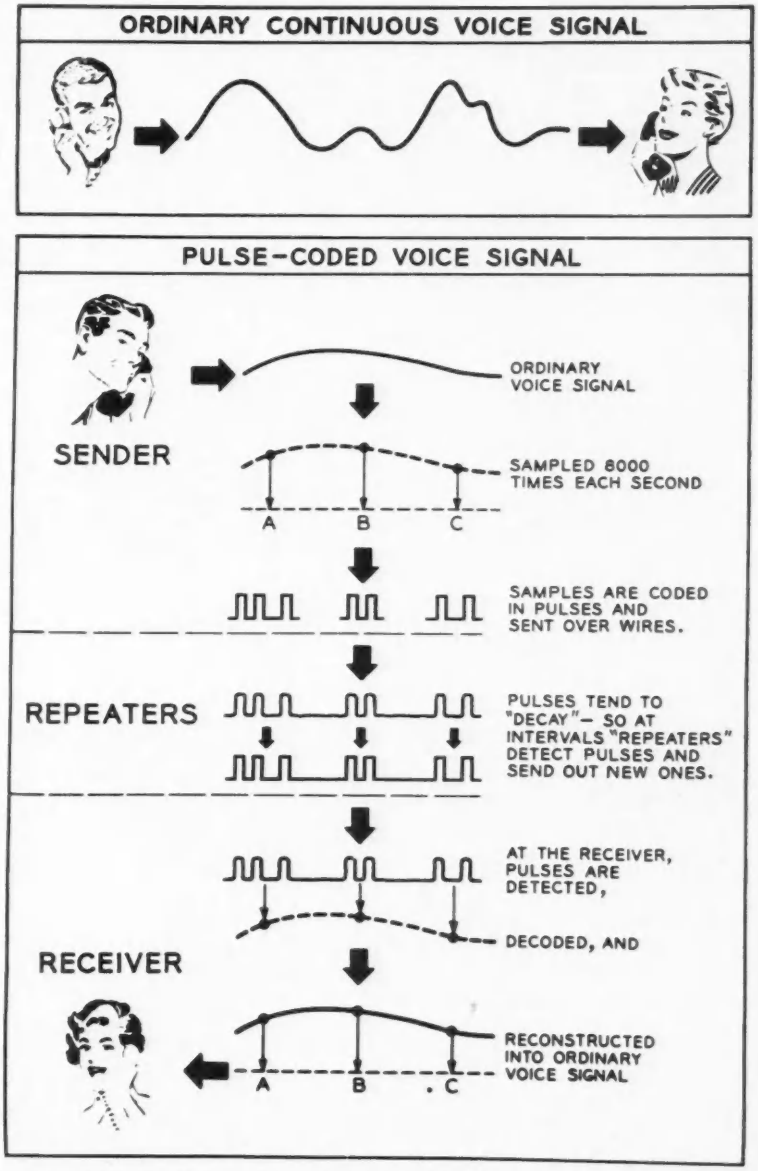
The principle is called "pulse code modulation," or simply "PCM." The experimental system now in operation between Newark and Passaic is called the T-1 system.

Instead of sending a continuous voice signal, the T-1 takes samples of the speaker's voice very rapidly – about 8,000 times a second. These samples are encoded into a series of pulses, and the pulses are sent out over the wires. At intervals of approximately 6,000 feet the coded signals are reconstructed and sent on to the next repeater point.

The system sends pulses over the wires so fast – one and one-half million per second – that the codes of many different voices can be interlaced on the same wires, thus increasing the message capacity of the wires.

The T-1, forerunner of PCM systems that may eventually stretch across the country, was designed to serve metropolitan area routes of up to 25 miles. (Other systems that permit wires and cables to carry many messages have been used for years by telephone companies, but they have been economically feasible only over fairly long routes.)

The new system is expected to be particularly useful in large cities such as New York, where congestion below ground has often made it difficult to find room for additional telephone conduit.



This diagram illustrates the difference between the conventional "electrical model" of the voice by which telephone calls are transmitted, above, and the pulse-code modulation method, below.

TV shops GET THE MESSAGE from automatic telephone answering service

Mr. William Singleton (right) shown with J. B. Doty of the Skagit Valley Telephone Company

"My Electronic Secretary® set has become an integral part of my TV sales and repair business"

WILLIAM M. SINGLETON, Singleton's TV, *Mount Vernon, Washington*

Radio and TV shops have one thing in common with other types of business . . . COMPETITION. Only in extremely rare cases does the TV repair man find himself in a town without a qualified competitor . . . and even then, a "handy-man" with an ohmmeter in his basement, steps in to take some of the business, because the TV Service man couldn't be reached.

Back in June of 1955, Mr. Singleton decided that in order to get more than his share of the sales and service business in Mt. Vernon, Washington, he must offer better service than his competitors. Due to the fact that, in this business, incoming phone calls received after-hours is the rule, rather than the exception, an ELECTRONIC SECRETARY phone answering set was the answer.

In the past six years the Singleton TV Shop has added many new customers and kept the old ones happy while the overhead remains at a minimum.

Customer is the past tense of Prospect. Don't let YOUR PROSPECTS become your COMPETITOR'S CUSTOMERS. Give them 'round-the-clock telephone service with an ELECTRONIC SECRETARY automatic phone answering set.

Ask your Telephone Company about the low rental cost.

ELECTRONIC SECRETARY®

The LP (long play) Model is illustrated. For information on the complete new line of ELECTRONIC SECRETARY automatic answering sets, write to your distributor listed below.

Service Businesses are Natural Prospects

Most service businesses, TV Repair, Appliance Repair, Plumbers, etc., are small—usually consisting of one or two men. When they are out on a call the shop is closed . . . the telephone is unattended.

An ELECTRONIC SECRETARY automatic phone answering set is a necessity for this type of shop. A simple announcement message taped in the owner's voice might change a would-be disgruntled prospect into a satisfied customer.

A PROVEN REVENUE BUILDER

The Skagit Valley Telephone Company is one of many which has profited from the leasing of telephone answering sets. In a letter from Mr. G. J. Stover, president, he writes, "We have a number of your Electronic Secretaries in service providing us with a good source of revenue. They are also providing a much needed service to the public."

A proof of the opposite page is being mailed to you. Use it as a sales tool. Point out, to service men in your area, the enthusiasm shown by Mr. Singleton after six years of Electronic Secretary operation.

Electronic Secretary Industries, Inc., Subsidiary of GENERAL TELEPHONE & ELECTRONICS

distributed by

AUTOMATIC ELECTRIC SALES CORPORATION
400 North Wolf Road Northlake, Illinois

LEICH SALES CORPORATION
427 West Randoph St. Chicago 6, Illinois

TELEPHONE ENGINEER
AND MANAGEMENT'S

INDUSTRY
NEWS REPORTS

Telephone Industry News Highlights

COAST-TO-COAST REPORTS

New York Independents hold 39th annual convention. Executive Secretary Cunningham warns of a "new and growing problem — the advent of direct competition from industry." W. A. Kern, president of Rochester (N. Y.) Tel. Corp. stresses need for "equalization of prices for telephone equipment . . ."

"The Challenge of Change" Emphasized at New York State Tel. Assoc. Convention

ADDRESSING the 39th Annual convention of the New York State Telephone Association at Scaroon Manor, Schroon Lake, N. Y., the association's Executive Secretary Hamilton Cunningham warned of a "*new and growing problem*" — the advent of direct competition from industry and the fundamental change this is making in the character of the telephone business.

"During the past few years," Cunningham said, "private communications systems have been installed by our competitors for a growing number of New York State companies. Although our telephones and equipment are still needed for outside calls, these internal communications systems mean that only employes having contact with the public use our telephones. We've lost a lot of business here. Right along with this goes the threat of private microwave that in most cases is a substitute for services and facilities provided by telephone companies."

Reporting that there was only one privately-owned microwave link in 1950, and 10 years later this had mushroomed to more than 1,000 links covering 35,000 miles, the association executive stated that "More than 70 manufacturers build private microwave equipment designed to compete with common carrier telephone services."

USITA President CLIFFORD C. PEARCE of Riceville, Iowa, speaks at the opening session of the New York convention.

"These firms," he said, "provide fast installation service tailored to the customer's needs. They offer a choice of prices and services, they can pick up customers both for a few control circuits or multi-line communications networks between fixed points. This sort of thing is felt first in the larger communities, but our rural areas are not immune either."

Pointing out that *Thomas' Register of American Manufacturers* lists 115 companies producing "intercommunicating systems," Cunningham stated that "most of these firms offer satisfactory equipment and they'll install it in double-quick time."

"They don't know the meaning of the term held orders," he said. "Although some of them are veteran communications firms, many are late comers spawned by defense developments. One thing these competitors of ours have in common is this: They're ready, anxious and able to do business with our customers."

Cunningham emphasized that the competitive firms have an edge on telephone companies in three ways: (1) They don't bear a discriminatory tax burden; (2) being non-regulated, they have greater price freedom; and (3) the smallest producer of inter-communicating systems can buy his component parts wherever he chooses, at whatever price he is able to negotiate.

"One thing is abundantly clear to me — we can't afford to ignore this new challenge," Cunningham stated. "The changing nature of communications technology means that our franchise can no longer protect us from

Here is the tool that permanently anchors a wire loop fastener to concrete with less than ten taps of a hammer. There's no drilling and there's no plugging.

It's called Shure-Set.®

It does plenty of other fastening jobs too. Junction boxes, conduit clips, gutters. Heaters, signs, Wiremold. Using Shure-Set you can attach almost anything to concrete and other masonry materials. And you do it rapidly.

How is it possible? A special steel fastener is inserted at one end of Shure-Set, your hammer blow is directed against the large movable anvil at the other end. The easy-to-hit anvil concentrates the force of the hammer blow onto the fastener, but within the confines of Shure-Set's precision bore. The fastener can't waver or skew off. Every swing of the hammer drives it straight and true into the concrete. (Note: powder charges are *not* used in this tool.)

And Shure-Set's austempered steel fasteners *never* bend or break. Austempering has given them the ideal metallurgical properties for penetrating hard construction materials (it's the same heat treatment we give our *powder-driven* fasteners). These steel drive pins ("nails") and threaded studs make a strong, permanent, compressive bond to concrete. For a light-duty fastening, you won't find anything stronger.

And for the few cases—such as tile or glazed brick—where "tap-and-turn" work is unavoidable, a drill holder attachment is provided for converting Shure-Set into a superior masonry drill. Still another attachment fits it for use in fastening sheet metal to sheet metal.

Shure-Set is on its way to becoming a tool box standard because of its immense versatility. And because it pays for itself by saving time. Usually on the very first job. It also saves a lot of (put your own price on it) perspiration.

To find out where to buy Shure-Set nearest you, look under TOOLS in the Yellow Pages of your directory.

303-H Winchester Ave., New Haven 4, Conn. WINCHESTER-WESTERN DIVISION Olin

the inroads of our competitors. Apathy at this point will land us right in the competitive caboose, just as it did the railroads. As Theodore Levitt of the Harvard Business School points out, even after the advent of automobiles, trucks and airplanes, the railroad tycoons remained imperturbably self-confident. If you had told them 60 years ago that in 30 years they would be flat on their backs, broke and pleading for government subsidies, they would have thought you totally demented."

Suggesting ways of meeting this challenge the executive secretary stated "First, we've got to improve our overall performance."

"This covers a lot of ground," he said. "It means putting new and better products into the service we give. It means being able to get the capital we need in order to invest in more efficient plant. It means finding out what our customers want and can profitably use, and providing it for them at compensatory rates. It means more new and optional services and selling them hard. It means attracting good people and developing a strong management team. If we do these things, the quality of our basic service will improve further. . ."

Emphasizing that to meet competition the industry must "make a thorough study of the communications needs and wants of our larger business customers," Cunningham stated, "From now on we're going to have to anticipate demand — or our competitors will be in there ahead of us."

"Many large business customers who have turned to our competitors for private communications systems have criticized our lack of flexibility and speed," he said. "They feel we're rigid in our policies and practices, that we're uninterested in their individual service problems — and the sad, sad truth is that in many instances they've been quite right. So now we've got to double back and look at service from the customer's point of view. Our own internal measurements have been a valuable yardstick to measure the quality of the service we provide. But unless we examine service from the customer's vantage point, he simply isn't getting the service he deserves."

In his address to the convention, George S. Beckwith, president of the New York State Telephone Association, and president of the Au Sable Valley Telephone Co., Inc., warned that "Any telephone man investing good dollars in long-life telephone plant should be interested in the dollar and what's happening to it."

"If you invest with today's dollar", he said, "and only get back, over the years, ever decreasing dollars you are getting gyped. Just look at what's happened in recent years. In the first place, we have engineered the greatest inflation in our nation's history; we have induced millions of people to incur debts for homes, cars, etc., in the belief that ever increasing prosperity would be, or could be made permanent; we have robbed holders of life insurance, savings, etc. of nearly $200 billion dollars in the

last 20 years with inflation. We have even had a professor at M.I.T. preaching the gospel that 5% inflation a year is good."

Emphasizing that the U.S.A. in two centuries has grown from an infant to the industrial leader of the world, Beckwith stated "that is what a nation with about 6% of the world population has been able to do. This is what a nation of free men have done. With this kind of a record is there any sound reason for trading our form of Government for an untried Socialistic experiment???"

"Instead of the one billion dollar deficit forecast for fiscal 1962," he stated, "Secretary Dillon now forecasts the deficit at $3.8 billion, and other experts say $5 billion is a better estimate — and you all know there are spending plans sprouting in all directions. Now Secretary Dillon is talking about fiscal 1963, and is telling members of Congress that with the expected sharp rise in tax revenues that we will then have a balanced budget and can begin to

NYSTA President GEORGE S. BECKWITH, of Keeseville, N. Y., presided over the opening session of the New York convention.

reduce taxes. Do you believe that? Other authorities are warning that even Kennedy's own budget experts do not know what the New Frontier programs are going to cost and they are warning about a *rise* in spending in five years or less of $60 billion."

Asserting that the independent voters of this country hold the balance of power, — Beckwith told the convention, "you business men are the independent voters and it's up to you to get back on the political throne that you have abdicated so long. It's up to you to get the lead out and control the servants. The mess can be straightened out if you will get busy — politically."

William A. Kern, president of the Rochester (N.Y.) Telephone Corp., told the New York convention "if there were some way to equalize prices for telephone equipment throughout the entire industry, the long range aspects of Independent telephony would be much better."

"Ten years ago," he said, "we put a dollar and a half on the barrelhead to purchase in telephone plant what the New York Telephone Co. bought for a dollar. At present we must put up $1.65 to purchase what the Bell Company pays $1.00 to receive. This is the reason that our investment per telephone is considerably higher than theirs.

"The New York Telephone Co., with its huge metropolitan complex

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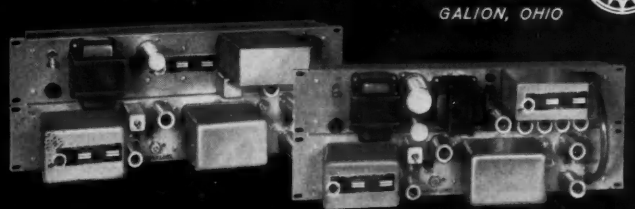

downstate, and its big toll plant upstate, has an average investment per telephone under $300. This is determined by studying their last annual report. On the other hand, we Independent companies who have modernized, average about $50 more per telephone with no outside toll plant."

The Rochester Telephone president stated that the New York Telephone Co. has annual revenues of $130 per telephone compared with an average of $85 per telephone for Class A Independent companies, $72 for Class B companies, and $67 for Class C companies.

"To reach even these modest annual revenues," he said, "the Independent companies' local rates had to be consistently higher than the rates of the New York Telephone Co. for exchanges of comparable size. But there are limits beyond which local rates cannot go, no matter how well justified they might be from the investment, or rate base theories.

"When this situation occurs, the Independent company has but two paths open: First, it can seek a larger toll settlement from the New York Telephone Co.; secondly, it can go to the federal government for REA money. If it chooses neither of these, it sells its property and franchise to a larger company, or to an individual who will probably obtain REA money to finance his new purchase. In my opinion, *if* there were some way to equalize prices for telephone equipment throughout the entire industry, the long-range aspects of the Independent industry would be excellent. How we who are left have survived until now is a tribute to our will to live if nothing else."

Referring to the development and marketing of new products, Kern stated, "new gadgets are appearing at a mile-a-minute clip."

"In our business," he said, "these product development and marketing activities have become synonomous with rocketing profits. But I wonder. Considering our high costs and the high obsolescence of these items, I can't believe that there is a pot of gold at the end of the marketing rainbow.

"Certainly no company or group of companies should stand in the way of progress in communications. Such programs, as evidenced by the electronic dial system, may well revolutionize the industry and provide unthought-of benefits to the telephone user.

"However, sheer 'gimickery', such as the pushbutton Princess telephone will do nothing for the customer that his present dial telephone will not do, and will ultimately cost the Independent telephone industry millions of dollars by making utilitarian equipment, in excellent condition, obsolete. It is this 'novelty' aspect of telephone equipment which I deplore. It performs no unique function except to sell more equipment."

Pointing out that the Independent operating telephone company is not in the manufacturing industry, Kern emphasized, "We cannot apply profits from the sale of equipment we manufacture to the losses realized from premature obsolescence of excellent, workable plant equipment."

"The development and sale of products which provide status symbols through gimickery," he said, "will not necessarily increase telephone usage and can benefit only those systems which not only operate a telephone company but also manufacture telephone equipment."

Pointing out that the price differential for telephone equipment enters into the question, Kern stated "we pay approximately twice what the New York Telephone Co. pays for a compact telephone, an answering set, a teletypewriter, or a data phone. But we charge the same monthly rate and, not being magicians, we naturally make less profit on our investment."

In his concluding remarks, Kern warned — "If the next 10 years do not provide greater development than the last decade in setting up our industry along conventional American industrial and utility patterns, *there will not be one Independent telephone company left in this state.*"

"Just imagine," he said, "that Consolidated Edison, Niagara Mohawk,

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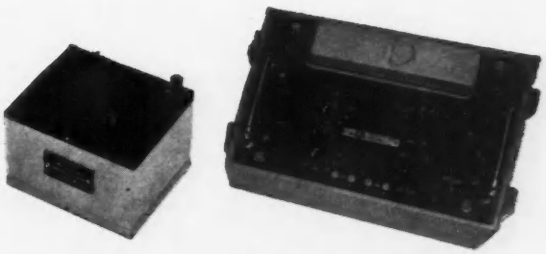
AIRTRONICS DEPENDABLE PRODUCTS FOR MODERN TELEPHONY

AIRTRONICS Far-end Terminating Set, designed to be used in conjunction with the Model 20B Test Hybrid, supplies the Far-end terminations required for return loss and singing-point tests.

Generally, two precision networks, 115H and 115AL cover the standard cable layouts in exchange plant, (the 115H covering 19 and 22 gauge H88 facilities).

The Far-end Terminating Set consists of a precision network, network build-out decades, selector switch and jacks, and binding posts to give flexible access to the components.



AIRTRONICS new multi-purpose, Portable Test Hybrid Set, Model 20B, makes acceptance, evaluation, and capacity balance tests easier, faster . . . locates cable opens accurately . . . accommodates standard networks. Either Singing-Point or Return Loss techniques can be applied. Accessories include external decade capacitor and variable resistor for use in locating opens, for compromise net, etc. Plug-in dial is also available.

Other Airtronic Products

- Precision Networks WE 115 type
- Build Out and Terminating Set
- Program Equalizers
- New — New Transmission Measuring Set

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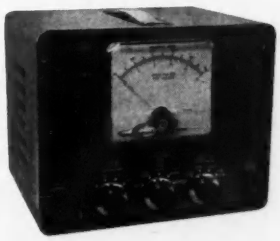

AIRTRONICS Pulse Meter is compact, easily carried, and plugs into the nearest 115 volt, 60 cycle ac wall outlet. Developed by telephone men FOR telephone men, the new pulse meter and power supply measures dial pulses from 0 to 15 pulses per second and percent make from 0 to 100 percent. It will accept loop, ground, battery, carrier, and polar-duplex pulses. Simple in operation, it can be easily carried and used at the test board, the telephone instrument repair bench — any place in the telephone exchange. For that matter, it can easily be moved to the actual subscriber instrument if the need arises. As an added bonus, the PMVPS-1 also gives you a dc power supply continuously variable from 0 to 300 volts. Use it to check transistor circuits, vacuum tube circuits, as a stand-by power supply — the sky is the limit! Best of all, you will be surprised that so much can be purchased for such a low price!

AIRTRONICS standard Artificial Lines accurately simulate a loaded or non-loaded cable pair of any desired length — from 600 to 39,600 feet.* Multi-position switches afford instant control over total length or load section lengths, so that coil spacings may be set to better than 1%, or as much as 10%. Common irregularities such as bridged taps, mixed loading or coils omitted can be introduced in a moment.

*Available with plug-in units for either #22 or #24 gauge cable, or mixed 22 and 24 gauge. Other commonly used gauges available on special order.

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The owner of a neighborhood drug store in Wichita, Kans., and his wife — Mr. and Mrs. HUGH T. POLSON — became A. T. & T.'s two millionth share owners. They bought their stock as part of an investment plan to provide for their children's education. Kay Louise is nine; Stephen Hugh is seven. Frederick R. Kappel, A. T. & T. president, presented the Polsons with stock certificate No. 2,000,000 at ceremonies in New York. During the presentation Kappel said, "This is an historic occasion. This is the first time that any company in the world ever reached a point where it had two million owners. Only in America could something like this happen. I think this is real evidence of how well the American free enterprise system operates. It is also the most convincing vote of confidence any business could hope for."

A T & T Salutes Wichita Drug Owner As The Firm's Two Millionth Stock Holder

THE OWNER of a neighborhood drug store at Wichita, Kansas, was saluted by the American Telephone and Telegraph Company July 26 as the firm's two millionth share owner.

Hugh T. Polson, 40, his wife, Irene, 39, and their two children — Kay Louise, 9, and Stephen Hugh, 7 — went to New York City as guests of the company to receive AT&T stock certificate No. 2,000,000.

Frederick R. Kappel, AT&T president, presented the milestone certificate to the family during a ceremony at the company's headquarters building. In introducing the Polsons to a representative cross-section of AT&T employes, Kappel said:

"This is an historic occasion. This is the first time that any company in the world ever reached a point where it had two million owners. Only in America could something like this happen. I think this is real evidence of how well the American free enterprise system operates. It is also the most convincing vote of confidence any business could hope for.

"The support and confidence of our share owners make it possible for us to provide good and improving communications service. And it is just as true that if we did not provide good service, we would not have such widespread share owner support.

"As our two millionth share owners, Mr. and Mrs. Polson symbolize the tens of thousands of people whose confidence in our future has led them

Please turn to page 86

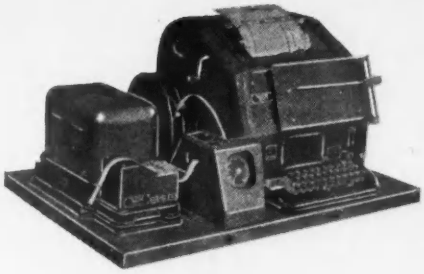
and New York State Electric & Gas were owned by a giant holding company. Suppose further that this holding company also owned General Electric and Westinghouse. Suppose further that as preferred captive customers, Consolidated Edison, et al., were able to buy generators, cables, poles and wires at prices substantially below those paid by Rochester Gas & Electric, Central Hudson and others. Would you expect that these so-called independent power companies could compete rate-wise with those in the combine? I believe your answer would be no! How long could Ford compete if it had to pay 60% more for car components than General Motors. Sometimes we can see other people's problems better than our own.

"In closing, let me observe that this specific problem is of recent vintage. During the 1930's, equipment supplied by Independent manufacturers was competitive, pricewise, with that supplied by Western Electric. It was not until the last two decades that this situation has changed immensely. Now, the squeeze is on Independent telephony."

Emphasizing that his comments should not be construed as an attack on any business, Kern stated "Others must run their businesses as they see fit."

"But, he added, "to survive, *we* must find a solution to equalizing p r i c e s for telephone equipment throughout the industry. Have you ever stopped to figure how efficiently you could operate if you could buy equipment at the prices charged to the Bell Companies? Have you ever stopped to consider that it might be possible to charge the low New York Telephone Company's rates, and still return a fair margin of profit? I hope that I have been able to focus your attention on what I believe to be the principal problem facing Independent telephony. If we do not solve it, we are all *dead ducks* — excuse me, *dead robins*."

Other speakers at the 3-day meeting included C. C. Pearce, president of the U. S. Independent Telephone Association, Riceville, Ia.; Ralph A. Lehr, commissioner, New York Pub-



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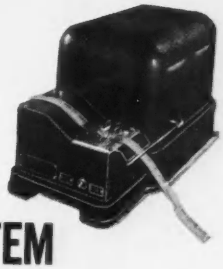

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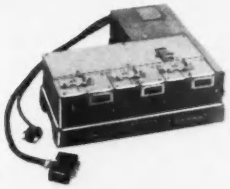

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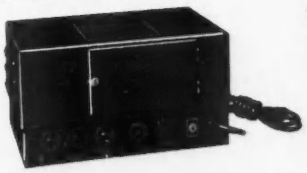

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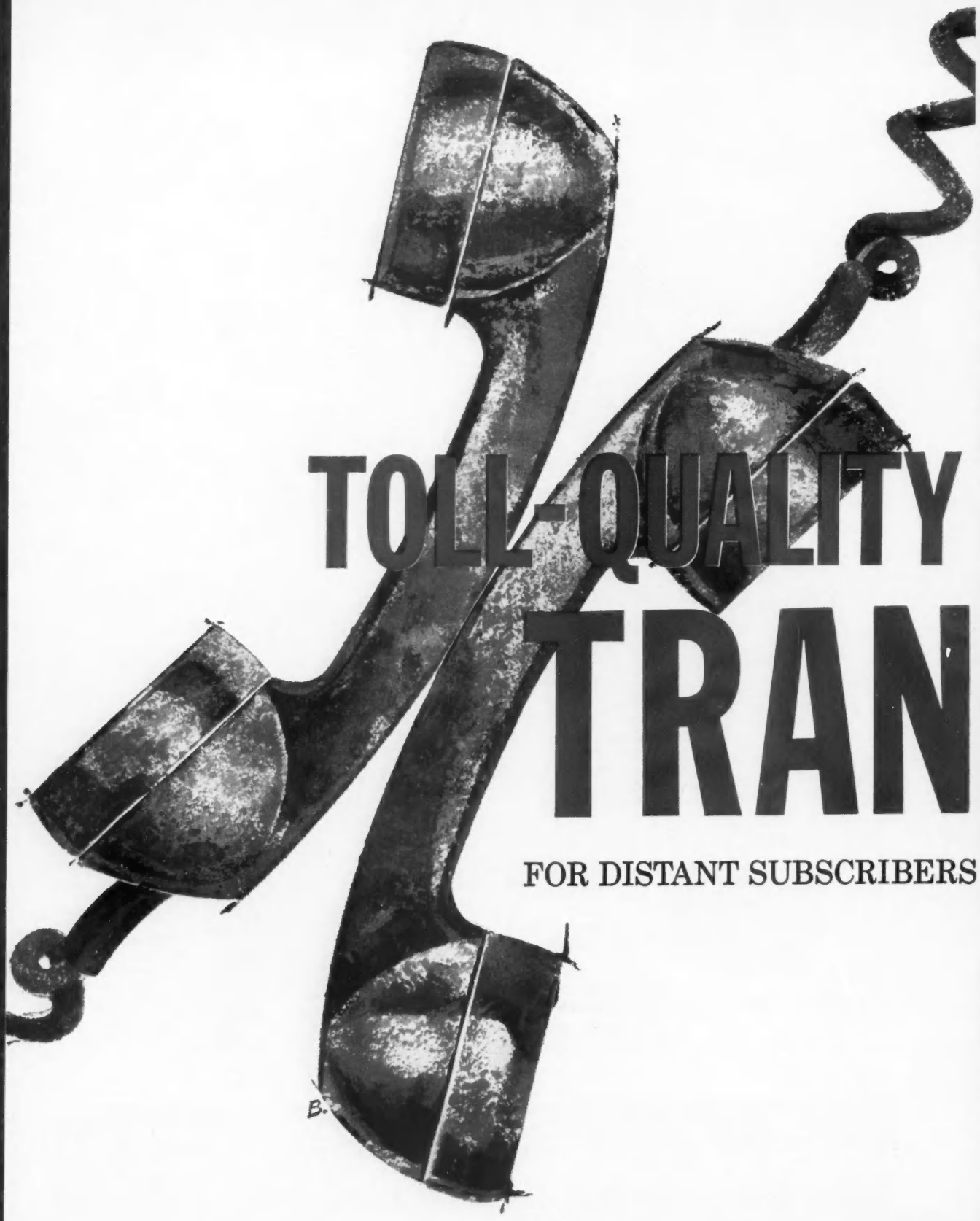

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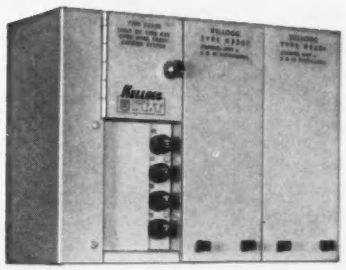
And now, system mileage can be *doubled* with one low-cost repeater, *tripled* with two repeaters!

Next time you get caught by sudden new service demands, conserve your capital: find out about carriers, from carrier experts. Call your ITT Kellogg representative or write the ITT Kellogg Regional Office nearest you.



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lic Service Commission, Buffalo; Armand J. Gariepy, director, Sales Training International, Barre, Mass.; Ronald S. Dodgson, supervisor, systems analysis, ITT Kellogg, Chicago, and Nelson Lee Smith, vice president, American Airlines, New York City.

During the business session George S. Beckwith was reelected president of the New York Association. Other reelected officers are:

C. Ray Lloyd, vice president; W. Malcom Griswold, treasurer; Donald F. Davison, secy-asst. treasurer; and Hamilton A. Cunningham, executive secretary.

Directors re-elected for one year terms are: William A. Kern president, Rochester Telephone Corp., and Marshall K. Taylor, president, General Telephone Co. of Upstate New York, Inc., and Tri-State Associated Telephone Corp.

Directors elected for one year terms are: Fred S. Florance, president. Highland Telephone Co.; William S. Kingman, president Chenango & Unadilla Telephone Corp., and Lewis F. Shepherd, operating vice-president Jamestown Telephone Corp.

Directors re-elected for two year terms are: C. Ray Lloyd, general manager Midstate Telephone Co., Inc.; and Roderick A. Nixon, treasurer, Chautauqua & Erie Telephone Corp.

Director elected for two year term was: S. Fenton Busfield, president Deposit Telephone Co., Inc.

J. Benedict Ackley, president Copake Telephone Co. was elected director for one-year term to fill unexpired term representing Hudson River District.

Carry-over directors are: George S. Beckwith, president, AuSable Valley Telephone Co., Inc., and Donald F. Davison, president Ogden Telephone Co.

Members of the Executive Committee are: George S. Beckwith, chairman, William A. Kern; and C. Ray Lloyd.

S. W. States Tel. Co. Advances Pat Weekley

PAT WEEKLEY, general auditor, became controller of The Southwestern States Telephone Co., Brown-

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To get the complete story on Special 080-25 COPPERPLY and other standard sizes, contact National-Standard Company, Niles, Michigan.

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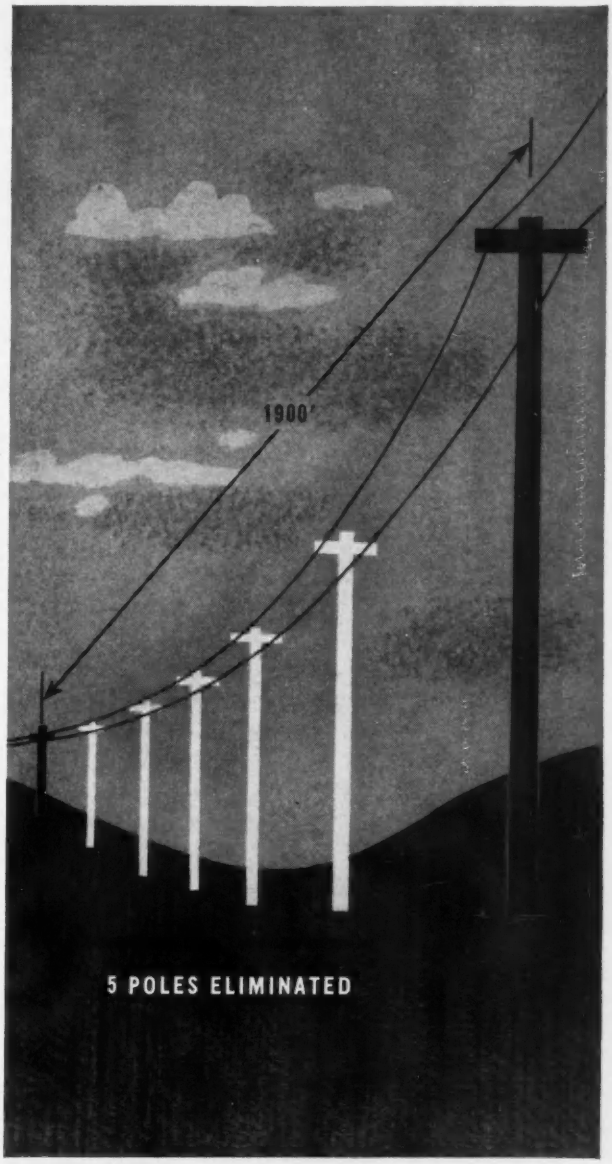
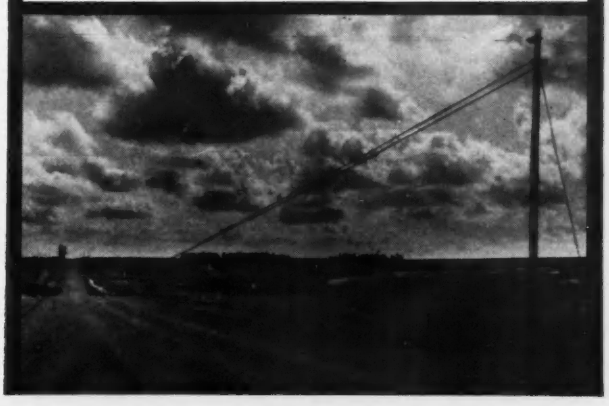


Special 080-25 COPPERPLY is designed to rest on the ground at 55% of breaking strength, allows great savings in pole installation.



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WALL or DESK MODELS

Factory Reconditioned Instruments equivalent to New with a full Guarantee and Refund Privilege. New Black Cases, Cords, and many new-surplus parts, including cycle ringers now available. Shipped 10 per carton, and we will pay the freight to your door on an order of 20 or more.

PRICE $14.50 — Dial Blank; or with Dial, Less Ringer (install your cycle)
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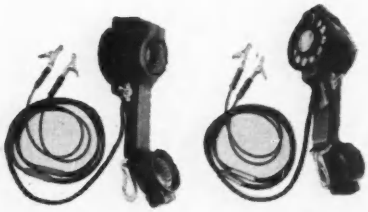

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W. E. 354 WALL and W. E. 302 DESK TELEPHONES

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Stromberg-Carlson, Leich and Kellogg

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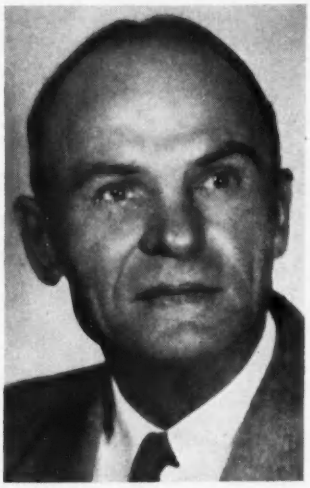


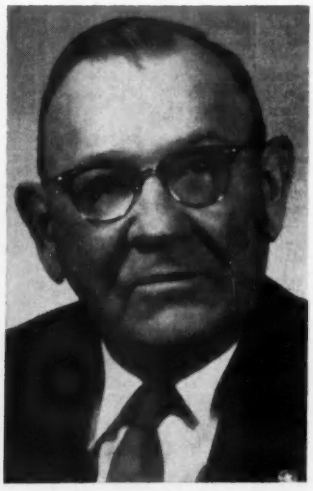
PAT WEEKLEY

wood, Texas, on June 30, D. T. Strickland, vice president and general manager, has announced.

His election as an officer of the company has been confirmed by the company's board of directors. He also will become assistant secretary and assistant treasurer of the company.

Strickland also announced that L. V. Ford, controller, will enter semi-retirement after 27 years with the company. His future duties with the company will involve handling matters pertaining to Four States Telephone Co., wholly-owned Southwestern States subsidiary, formed to provide rural telephone service under Rural Electrification Administration (REA) financing.

As general auditor, Weekley has been in charge of the company's ac-



L. V. FORD

counting department. The controller's department will be integrated into the accounting department with Weekley in charge of the combined departments, Strickland said.

Several organization changes within the accounting department have been announced by Weekley.

Under Weekley's supervision will be Jack Rutland, auditor of receipts and disbursements; Frank Noad and Raymond Blagg, general accountants; M. C. Althaus, planning and methods supervisor and Bill Hart, statistician.

Under Rutland's supervision will be Marie Lancaster, toll accounting supervisor; Mac Dunn, customer accounting supervisor; Richard Shockey, machine accounting supervisor; Travis Godfrey, plant accounting supervisor and Harrell Rice, disbursement accounting supervisor.

Weekley is a native of Dallas and attended Southern Methodist University in Dallas and Centinary College in Shreveport. He is a certified public accountant.

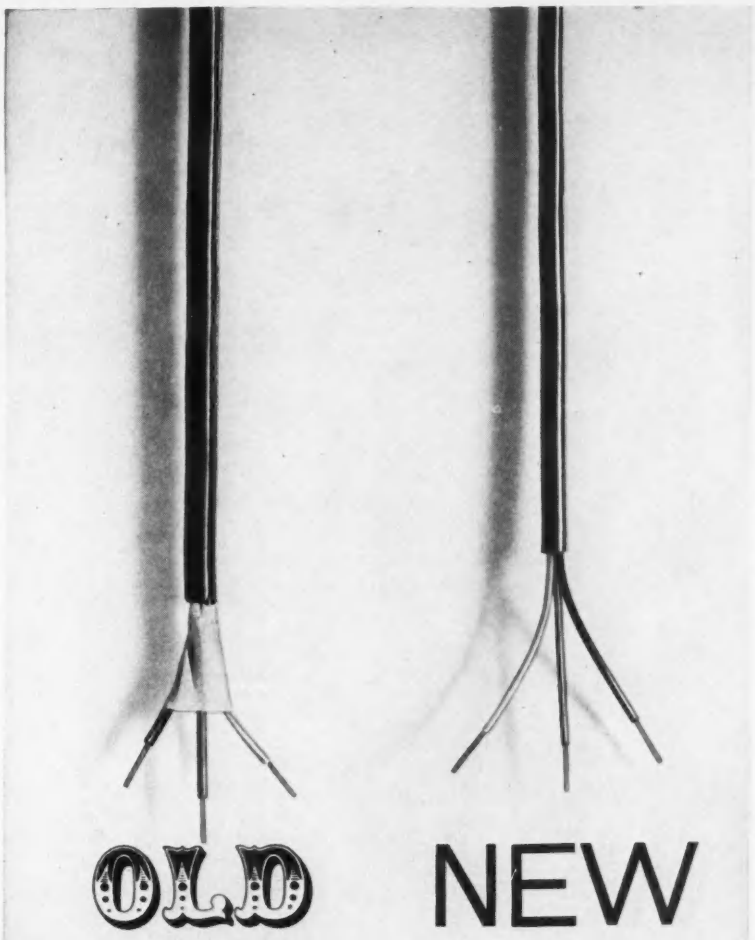
After 15 years with Arthur Young & Co., Weekley went to work for Southwestern States on August 1, 1944 as disbursement auditor. He was promoted to assistant controller on November 1, 1950. He has held the position of general auditor since July 1, 1954.

A native of Mississippi, Ford has been controller for the company since December 1, 1949. He went to work for the company May 5, 1934 as general auditor. Prior to 1934 he was an auditor for Arthur Young & Co., in Dallas.

DDD Started July 1 For Muskegon County

"A NEW ERA in long-distance telephone calls started on July 1 at 8:00 a.m. when Muskegon County phone users began dialing direct their calls to distant communities," T. A. Saunders, president of General Telephone Co. of Mich. announced recently.

The entire program has required over 8 million dollars for new buildings, equipment, and outside plant facilities. Included in the program has been the establishment of two new exchanges in Muskegon, on the East



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- high density polyethylene color-coded insulation with weather resisting vinyl jacket for easy stripping
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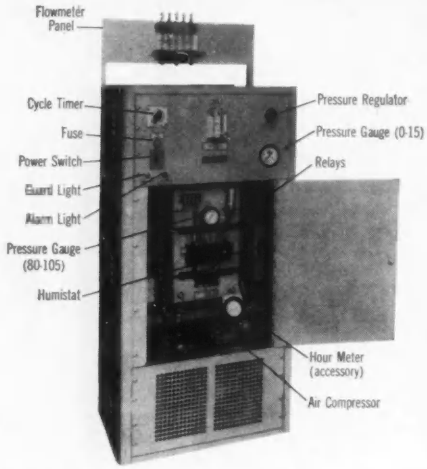

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- **Additional safety features on air compressor**
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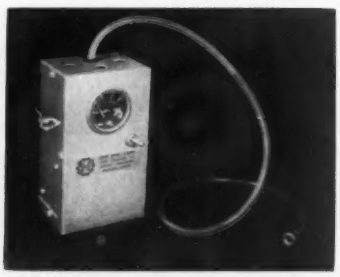

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Direct Distance Dialing for General Telephone's Muskegon County customers arrived July 1, MISS JUDY M. DUFF of the company's accounting department points out. The poster she holds, which appeared on Gen Tel's trucks during June, emphasized that customers would be able to dial their own long distance calls direct to almost any community in the U. S. or Canada, starting July 1.

and the South side. The amount of switching equipment in the other exchange buildings has been greatly increased with building expansion required at Whitehall and Lakeside, while new buildings were constructed at North Muskegon, Fruitport, Coopersville, Holton, Conklin and Pentwater. Shelby and Hart exchanges will have new buildings, dial service, Extended Area and Direct Distance Dialing in 1962. Ludington customers already have both dial and Direct Distance Dialing, as well as Extended Area service to Scottville made possible by completion of a $1.5 million improvement project in 1959-60.

B. R. Davies, Muskegon district manager, noted that 51,740 area customers were included in the early morning DDD conversion on July 1. He said, "It will be possible for these customers to dial direct to over 55 million phones throughout the U.S.A. without operator assistance."

GT&E Chairman Reports 2nd Quarter Income Up

GENERAL Telephone & Electronics Corp., New York City reported July 24, through its Chairman and Chief Executive Officer, Donald C. Power, that there was a gradual im-

provement in the company's over-all business during the second quarter of 1961. Noting that total sales and revenues in the second quarter amounted to $296,968,000 as against $287,672,000 for the first three months, Power stated "the tone of the economy seems to be on the upswing, and we believe that the second half of 1961 will show further improvement in our picture."

Net income on a consolidated basis was 10.2% ahead in the second quarter over comparable results in the first three months, and amounted to $17,057,000 as against $15,481,000 for the first quarter. Earnings per share applicable to common stock also showed improvement in the second quarter and amounted to 24 cents on 70,504,000 average shares outstanding compared with 22 cents on 70,600,000 average shares for the first quarter.

In reviewing the second quarter results, Power pointed out that telephone revenues had been the best in the corporation's history. For the second quarter, net income from the telephone subsidiaries amounted to $11,899,000 compared with $10,913,000 for the first three months. "Our telephone gain is continuing satisfactorily," Power indicated, "the results of some of our recent rate cases are beginning to show up in our over-all earnings picture."

Manufacturing net income also showed improvement in the second quarter, Power said, and amounted to $5,534,000 compared with $4,600,000 for first quarter.

Results for the first six months of 1961 showed that sales and revenues amounted to $584,640,000 compared with $581,310,000 for 1960. Net income for the first half of 1961 was $32,538,000 as against $35,180,000 for 1960. Power emphasized that although results from telephone subsidiaries are improving and are running about 10% ahead of last year, they could not quite offset the effects which the economy has had on manufacturing profits.

Earnings per common share for the first six months were 46 cents on 70,581,000 average shares outstanding.

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**Also available for Calculagraph "round" models.*

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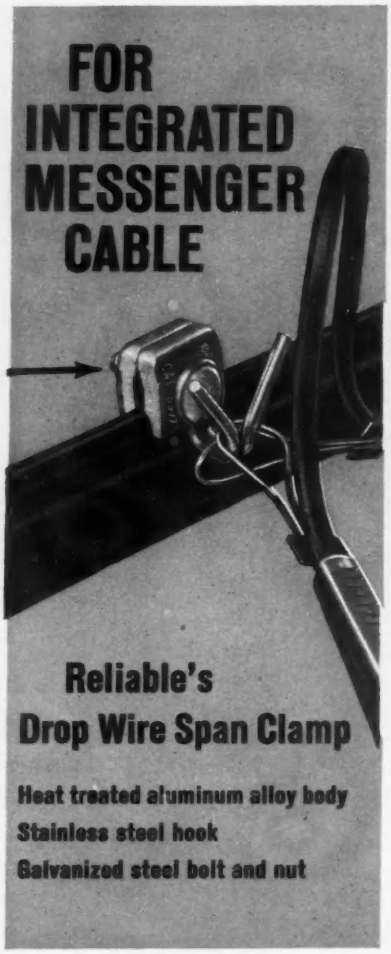

The No. 5577 Drop Wire Span Clamp is engineered for all Integrated Messenger Cables. A specially designed groove in the clamp protects the polyethylene web while providing a secure grip over the messenger jacket. It accepts 1 to 3 mid-span drops under full tension (plus wind and ice loading). Take-offs can be made at any angle. The square shank bolt, with nut, tightens securely with a wrench.

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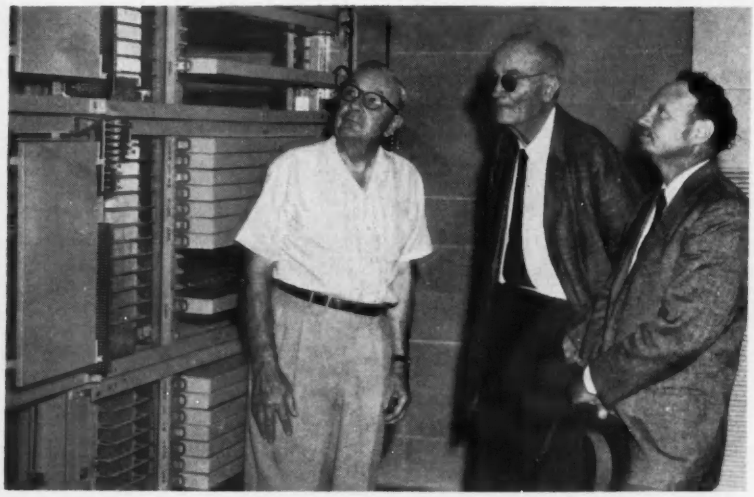

MINOR CORMAN (left) takes WARD and JOHN SNOOK of Foley, Ala. through the Atmore switchroom. Present installation provides 2,000 lines, 4,000 terminals, with special provision for handling subscribers who live over the state line in Florida.

Small Company Editor Converts Exchange at Atmore,

BILL CORMAN is well known to readers of this magazine through his frequent articles as "Small Company Editor." His father, Minor Corman, has an equally wide circle of friends over his 60 years of active service in the telephone business. Father and son together received congratulations and best wishes from their industry associates as a large, beautiful new main office at Atmore, Ala., was converted to XY Dial and became a toll center for nationwide operator dialing on June 4th.

Minor Corman, as a boy in 1901, sold groceries during the day and operated the Millersburg, Ky., switchboard at night. There followed service with the Bell Company in Kentucky and Oklahoma, several years as salesman for Kellogg Switchboard & Supply Co., the period from 1930 to 1939 as president of the Oregon-Washington Telephone Co., and

Telephone neighbors show "togetherness." Before the girls move into the new toll board it receives an intensive study by JESSE and RALSTON ROBERTSON of Bayou la Batre, FRED THOMAS of Eclectic, LLOYD VAUGHAN of Florala.

At the stroke of midnight BILL CORMAN, TE&M's contributing editor, pulls the main fuse killing the old board. W. J. Morris had his plant crew "poised to pull picks"; Julia Bryars had her girls at the new 6-position toll board. The merry click of switches proved how many had stayed up to participate in this important event for Atmore.

finally settling on properties in Alabama in 1943. Bill just naturally grew up in the telephone business, with a little time out for college up Boston-way.

If TE&M readers have missed Bill Corman's column recently, they will appreciate that conversion of a 2,000 line office can take a bit of concentration. However, Bill and his Dad have the welcome mat out, and would love to show you around.

JOSEPH J. BROWN, chairman of the Nebraska Railway Commission, uses direct distance dialing to dial a call from LT&T's 150,000th telephone at Beatrice to his office at Lincoln. LT&T Vice President MERLE M. HALE, at left, and Area Manager LLOYD OGLESBY observe the ceremony as they assist with dialing instructions.

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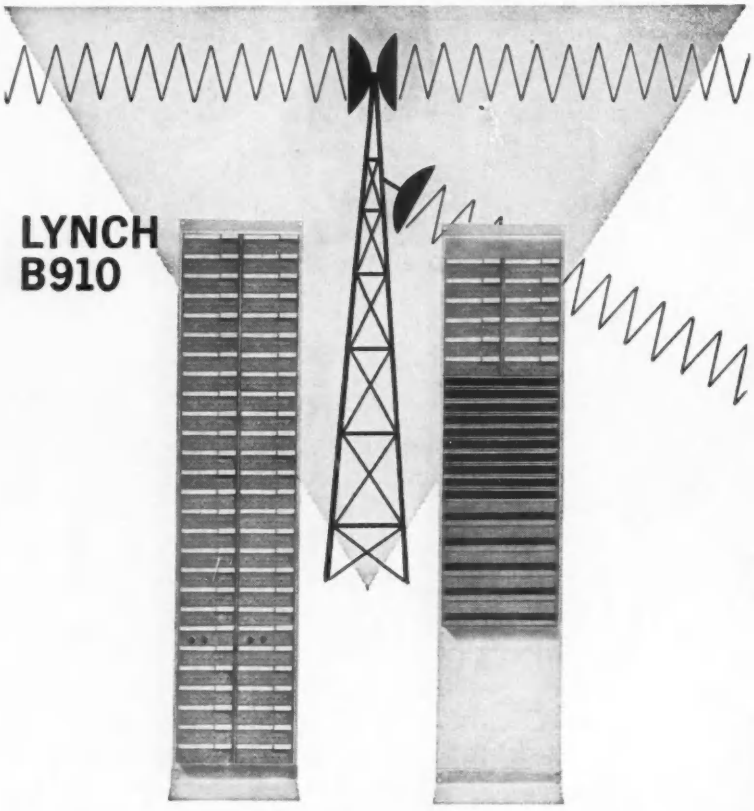

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"Stockholders"

(Concluded from page 74)

to invest their savings in this business."

The Polsons jointly own 10 shares of AT&T stock. They bought it as part of a diversified investment plan to provide for their children's education.

Kappel also presented the Polsons with a newly designed push-button Princess telephone bearing the inscription: "Presented to Mr. and Mrs. Hugh T. Polson, Two Millionth AT&T Share Owners, July 26, 1961."

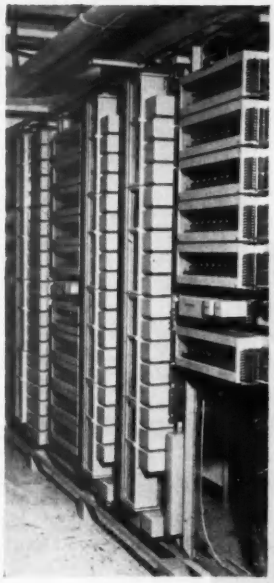
The presentation came a little more than a decade after AT&T ownership reached the one millionth mark. It was on May 15, 1951, when Mr. and Mrs. Brady Denton of Saginaw, Michigan, came to New York to receive Certificate No. 1,000,000.

"Since 1951," Kappel said, "we have introduced literally hundreds of new services and products, which have increased the speed, convenience and scope of telephone service."

Kappel also described the company's plans for a satellite communications system, and gave a brief rundown on the Bell System's contributions to science and defense. He referred to the System's three principal entities — Bell Telephone Laboratories, the Western Electric Co. and the operating telephone companies — as "an effective and inseparable triumvirate."

Kappel noted that Wichita was among the more than 21,000 American cities, towns and villages in which AT&T stockholders live. Individuals own 94 per cent of all AT&T stock, the most widely held in the world. About 1,400,000 persons have fewer than 100 shares, 335,000 persons hold between one and 10 shares, 495,000 persons own between 11 and 30 shares, nearly 230,000 own 31 to 49 shares and 350,000 own 50 to 99 shares.

Both Mr. and Mrs. Polson are native Kansans. He was born at Moline and she at Hoisington. They met in 1947 while she was working for the telephone company at Topeka and he was studying pharmacy at the University of Kansas.



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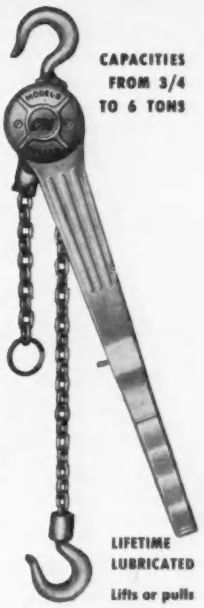

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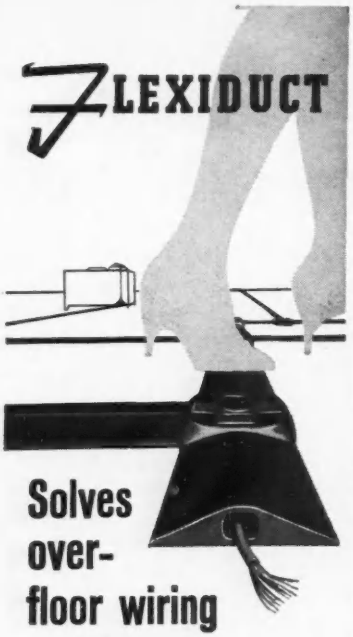

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"An REA Borrower's Problem"

(Continued from Page 46)

other changing factors present in the usual operations of telephone companies. The point is that in the third year, this shortage becomes something like $500, and the fourth year, about $800, and so on, until in the last year, it is $10,000.

The conclusion we now arrive at is this — the commission approved a perfectly fair set of rates *based on the first year of operation*. But the rates are not fair when the entire life of the loan is considered. What would actually happen is that, if everybody acts prudently, the company should get a rate increase every three or four years during the life of the loan, in order to keep meeting the ever increasing principal repayment.

Thus, the subscribers using the service during the latter years of the loan would be paying part of the costs of the subscribers who used the service during the early years of the loan. And between rate cases, there would be the accumulated loss since the last rate case. But such a series of rate cases would be most difficult for almost everyone to understand — our revenue has not decreased, our expenses (except for the Income Tax) have not increased. And eight or ten such rate cases over the 30 to 35-year life of the loan would be practically impossible of accomplishment.

The answer would therefore seem to be that this problem should be taken into consideration at the very beginning — that both company and commission should recognize it and give weight to it in setting the very first scale of rates. Actually, the point is that when a corporation with an REA loan goes to a commission for a rate case, the entire case cannot be based on any one year's actual operations — and this is true whether the rate case comes in the first year or the 10th year, or the 20th.

To be fair and consistent, and to forestall a series of rate cases, a set of rates must be approved which gives the company more than it actually needs for that particular year. The excess should be used by the company in a prudent manner (for example invested in income producing plant, or set aside in a cash reserve).

Under this situation, the company would have excesses during approximately the first one-half of the remaining life of the loan, and shortages during the rest of the time — the idea being that these later shortages would be compensated by the early excesses.

Also the early excesses could be used to make prepayments on the REA loan, to be later used up by making smaller payments than the REA note calls for (and such a procedure is one highly approved by REA officials).

There is one further angle to this problem which is made clear by looking rather closely at another figure in the illustrations we have used. In *Table One*, where we assumed we would have the gross revenue we needed, it will be noted that the net required before interest and income tax amounted to 5.52 percent of plant in the first year, and 7.6 percent of plant in the last year. In *Table Two*, this figure remains 5.52 percent throughout. Thus, in order to have what we need over the life of the loan, the "Net before Interest and Income Tax" should average about 6.5 percent over the life of the loan.

As one further example, let's set up such a situation in *Table Three*, and use the first three and last three years of the life of the loan to illustrate what we accomplish.

Thus, rates set so as to produce "net before interest and income tax" of about 6.5 percent of plant (for this illustration) gives us overages in the first half of the life of the loan which just about compensate for the shortages in the last half of the life of the loan.

At this point a most important warning. The above illustrations have not been used to tell you what your percentages ought to be. Practically all companies, for example, have equity funds invested, and sufficient earnings on these must be included

PEC

PUREGAS PRESSURIZING EQUIPMENT

ON THE LINE

Puregas Air Dryers are available with capacities for any specific system. The air dryers are fully automatic, completely integral units all employing the dependable, trouble-free refrigeration drying principle.

J31 Pressure Guard

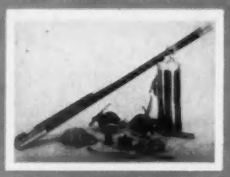
An around the clock pressure check, the J31 Pressure Guard (cable or pole-mounted) alerts crews to low cable pressure levels before moisture can start trouble.

Cable Pressurization Computer

A real time saver for performing the mathematical computations required for analysis of cable pressure systems. The PEC Pressurization Slide Rule lists pneumatic resistances for all gauges and pairs of cables. Computations can be made for flow, pressure drops, distance and pneumatic resistance, etc.

Semper•Seal

A permanent, clear cable splice and plugging compound, Semper•Seal forms a weather and gas-tight seal while providing perfect cable encapsulation.



Spray Leak Detection Kit

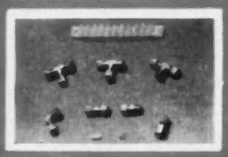
A complete, easy to use Kit makes possible the use of the spray leak test method of locating cable sheath breaks at low cost.

DP25A Dual Pressure Panel

Pressurized dry air can be supplied at two different pressures from Puregas Air Dryers by employing the DP25A Dual Pressure Panel or kit.

POLY-COR Tubing

Light, flexible, simple to install Poly-cor instrument tubing available with 3, 5, or 10 coded ¼" tubes in moulded harness. Poly-cor tubing is used to pipe pressurized dry air from meter panels to cables.

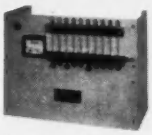


Miscellaneous Fittings

Assorted fittings are available from Puregas for making pressure tight Poly-cor and copper tubing connections.

AO-1 Automatic Oiler

The new AO-1 oiler maintains correct oil level and increases the oil capacity of any X-2 Compressor.



MP25A Meter Panel

Puregas Field Proven Meter Panels measure and distribute pressurized dry air to toll, trunk and exchange cables. Available with banks of 3, 5 or 10 air flow indicators, the MP25A will determine when maintenance is required on the outside cable plant.

Model 600PM Air Dryer

Designed for outdoor operation, this pole mounted 600 std. cu. ft. per day unit supplements central office equipment as a booster pressure source on long cable runs. Also ideal for microwave transmission, railroad and bridge cable applications.

Model 600 Air Dryer

This economical "Packaged Pressure Source" was specially designed for small telephone exchanges, CDO's, repeater, toll cable stations, railroads and other various communication networks. This unit, providing 600 std. cu. ft. of dry air per day, is available with a factory mounted meter panel.

Model 750 Air Dryer

A 750 std. cu. ft. per day Pressure Source available to pressurize small to medium size exchange cable plants.

Model 1500 Air Dryer

This 1500 std. cu. ft. per day unit is sized to pressurize cable plants of medium to large telephone exchanges.

Model 5000 Air Dryer

This 5000 std. cu. ft. per day Dry Air Source will pressurize the cables of large telephone exchanges and central offices.

Send today for the Puregas Cable Pressurizing Catalog or for the specific literature you need.

Data Sheets:

- ☐ *Model 600 • Model 600PM • Model 750 • Model 1500 • Model 5000*
- ☐ *Cable Pressurization Computer*
- ☐ *Semper•Seal Plugging Kits*
- ☐ *Winton Spray Leak Testing Equipment*
- ☐ *Bulletin 110—Why Cables Should be Pressurized*
- ☐ *Bulletin 120—Cost Comparison—Dry Air vs. Nitrogen*
- ☐ *Bulletin 130—Cable Plugging Practices*
- ☐ *Bulletin 300—Puregas Meter Panels*
- ☐ *Price Schedule (Air Dryers, Meter Panels, Tubing, Accessories)*

☐ **Have Representative call to discuss my requirements**

Name_____ Title_____

Company_____

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KEEPS 'EM TALKING RAIN or SHINE

The Leading Producer of Telephone Cable Pressurization Equipment

PUREGAS EQUIPMENT CORP.

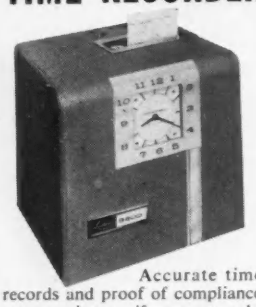
578 Oak Street, Copiague, L. I., N. Y.

PEC

Keep those wage hour records on a

Lathem

TIME RECORDER



Accurate time records and proof of compliance are *mandatory*, if you are subject to the Wage Hour Law.

For years, Lathem Time Recorders have been simplifying wage-hour timekeeping for business. Many companies have avoided stiff fines by having time cards to prove compliance.

And, here's another fact, the new revisions in the wage-hour law may mean increases in your salaries and wages. If so, it will be more important than ever to eliminate tardiness with a Lathem Time Recorder.

There is a Lathem to fit your size business – priced to fit your business budget, and capable of paying for itself in a matter of months.

LATHEM TIME RECORDER CO.

68 Third St. NW, Atlanta 8, Ga.

WITHOUT OBLIGATION Send catalogs and prices on Lathem Recorders, together with proper time cards for keeping wage-hour records.

COMPANY_____

CITY_____

STATE_____

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as well as principal repayment requirements.

The intent of this article has been to point up the problem in its simplest terms, and not to present figures or percentages which are applicable to you, or for that matter, which are even average figures. As a matter of fact, the percent earnings used are, if anything, absolute minimums — since we have assumed that all the net profit we need is that required to make principal repayments on the REA note. This, of course, is an absolute minimum need, to which all other needs of your actual company must be added.

— *Bill Corman.*

Magnetic Type Slug Deflectors for Paystations

WITHIN the past one or two years, magnetic slug deflectors have been made available for standard dial type paystations. This slug deflector is mounted on the paystation coin chute in such a location that slugs inserted in the 25 cent chute will be deflected away from the chime signal and in this way prevent operation of the signal to deceive the operator into thinking that a 25-cent piece had been deposited.

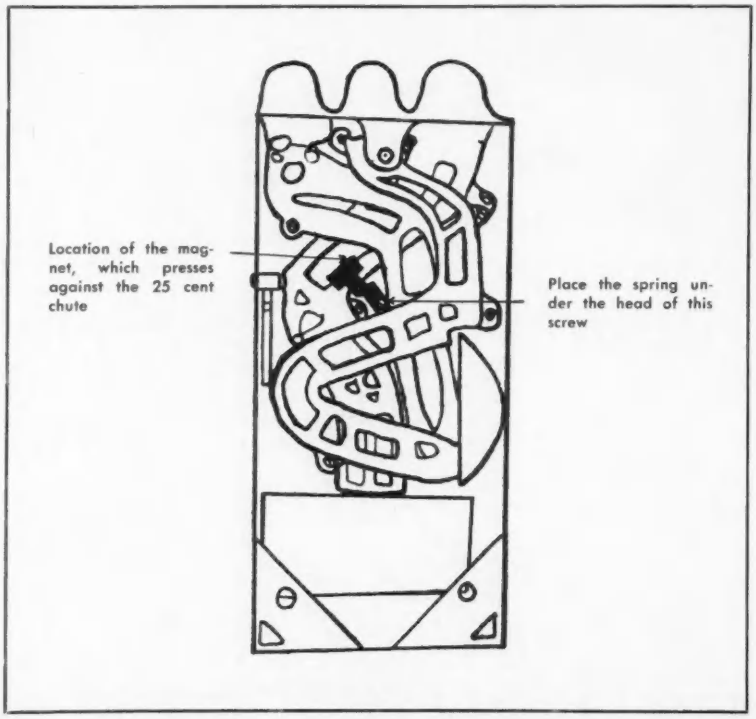
A similar and effective slug deflector is now available for use on the older 11- 14- or 23-type paystations. These are manual type paystations which are no longer manufactured but a good many are still in service. There has been a demand for deflectors that can be used on these paystations.

For these older type paystations, a magnetic deflector kit is now available. It consists of a magnet to be placed next to the 25 cent chute, washers and springs for mounting the magnet. The magnet is mounted as shown below.

After the installation is made, tests should be made with a slug to determine the proper position of magnet.

After the proper position of the magnet has been determined, tighten the screw and nut on the chute to fasten the magnet permanently in place. The paystation can be then reassembled and put in use.

Attachments of the magnet can be accomplished either in the field or in the shop.



View from rear of Paystation (courtesy, Telephone Repair & Supply Co.)

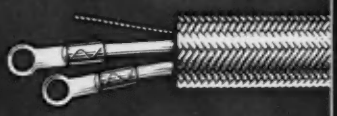
AE

All your replacement cord problems are solved quickly and efficiently at AE. That's because we stock a complete line of standard Comco cords and can supply "specials" quickly. All Comco cords are guaranteed for top-quality performance.

Comco's new plastic jacketing adds longer life and noise-free transmission to cords. It's more durable and crack resistant than Neoprene. Comes in black or your choice of 10 colors.

Your AE representative will give you full details on the entire Comco line. Next time you need cords, get the finest with fast, friendly service. Get Comco cords from Automatic Electric.

stocks a complete



line of Comco cords

- *Switchboard cords*
- *Handset cords for any make of phone*
- *Standard or special lengths*
- *Standard or special finishes*
- *Straight cords and coiled cords*

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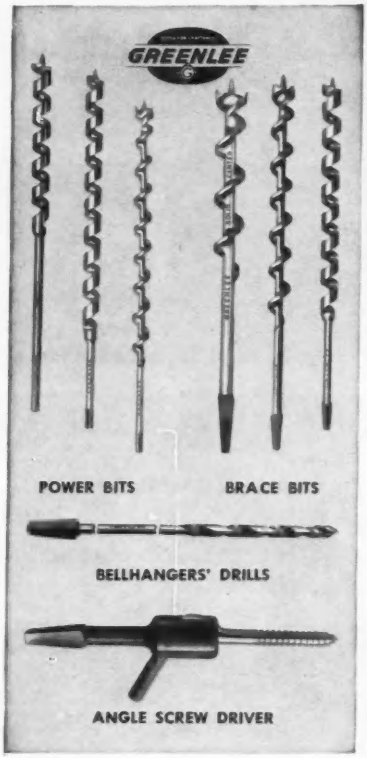
FAST CUTTING

high-quality tools for pole, crossarm, and wiring jobs...



Installations go smoother, faster when you standardize on precision-made GREENLEE tools. Wide choice of bits, drills, and ship augers for power drill or brace use. See your distributor or write for literature.

NEW GREENLEE NO. 437 UTILITY CHISEL

An all-new GREENLEE chisel for cutting daps in line poles. Blade is 2" wide, and heat-treated the full length for maximum service. Handle can't loosen or come off. Tough plastic handle . . . steel capped . . . extra long for firm, comfortable grip.

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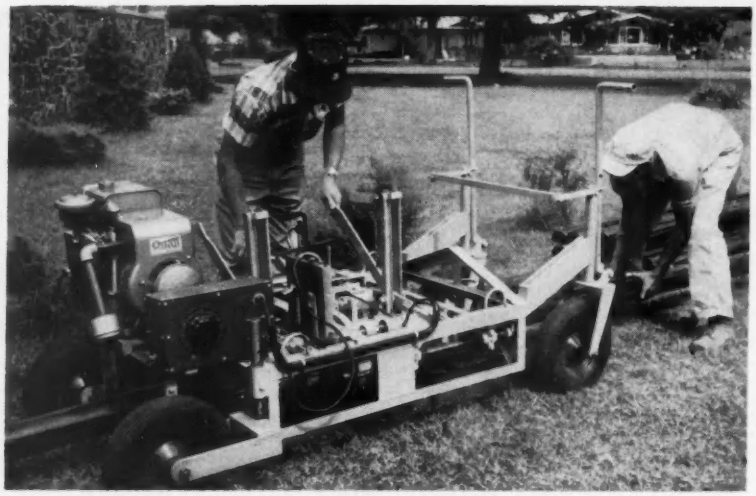
GREENLEE



The butt-fusion process is available in large mobile machines, capable of handling large installations. (Photo: Courtesy of Phillips Chemical Co.)

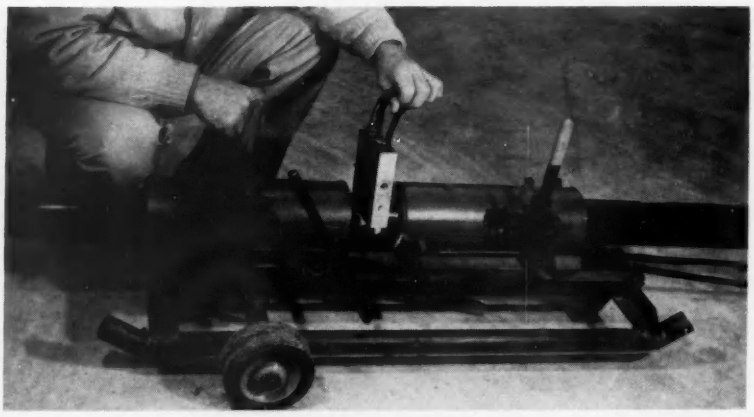
New "Butt-Fusion" Technique Broadens Applications of Plastic Pipe For All Industry

EMERGENCE of a "butt-fusion" technique for easy, in-the-field joining of high density polyethylene pipe was hailed recently at a New York City press conference as a major advance in broadening the applications of plastic pipe for all industry.

The new development will bring increased sales of high density polyethylene to the pipe industry, plastics manufacturers predicted.

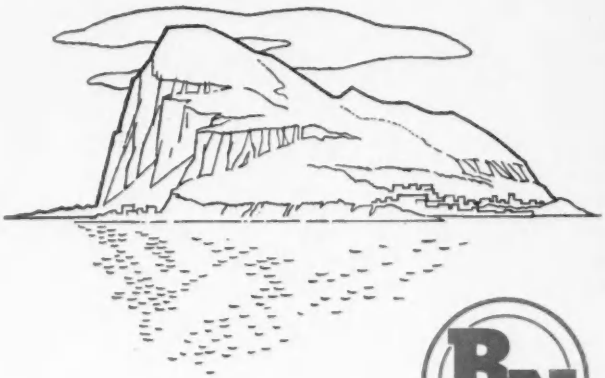
Phillips Chemical Co. — which pioneered both the high density pipe and the new butt-fusion technique — said Phillips has consistently saved 25 per cent or more in installation costs by the use of this plastic pipe, a faster joining technique than welded steel pipe.

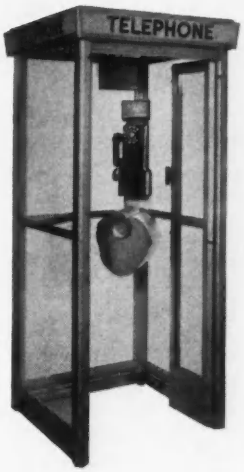
Since 1955, Phillips Petroleum Company has installed more than two million feet of pipe tailored from Marlex high density polyethylene produced by its wholly owned subsidiary, Phillips Chemical Co. Most of these installations are in the company's gas fields in the Southwest, and constitute the largest single com-



In the butt-fusion process, pipe ends are checked to insure they are clean and smooth before the cleaned heating plate is inserted between the aligned ends. The aluminum plate is uniformly heated to a temperature of about 400°F. (Photo: Courtesy of Phillips Chemical Co.)

PROVED **BEST** for durability





Strong, extruded aluminum posts, tempered glass and porcelain enameled steel panels provide exceptional strength and durability.

the **BN** **Booth**

For full particulars, consult your distributor or write direct ...
Benner-Nawman, Inc., 3421 Hollis Street, Oakland 8, California.

a B-N booth is a busy booth!

Gas-filled tubes discharge high voltages faster than carbon blocks — ten times faster than air gaps — and discharge both sides of the pair at the same instant.

TYPE 167-B For Carrier Terminals

Panel type. Two 300-500 volt, plug-in tubes; two 6-amp, auto-reset circuit breakers. Each tube discharges its respective line (power or telephone). Circuit breakers also serve power line and prevent follow-up arcs from normal current.

TYPE 167X1
For Telephone Lines

Single-tube, single-pair protector. Plug-in type, 300-500 volt tube. Bracket mounting, snap-on weather-proof cover. For carrier lines and drop side of subscriber carrier terminals.

Write or call us for Bulletin 259-C

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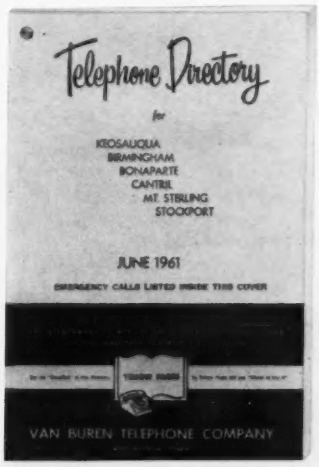

A Directory for the
Van Buren Telephone Company

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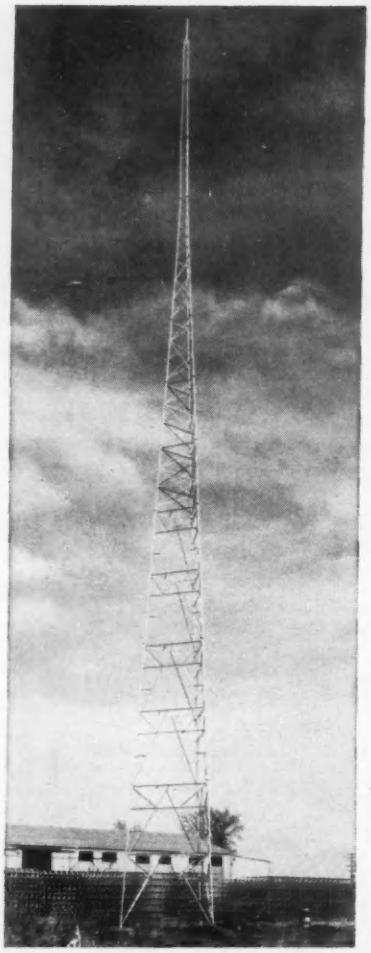
NOW available up to 170 ft.!



★ Fully self-supporting in heights up to 170 ft.
★ Rated a true HEAVY-DUTY steel tower, suitable for communication purposes, such as radio, telephone, broadcasting, etc.
★ Complete hot-dipped galvanizing after fabrication.
★ Low in cost—does your job with BIG savings—yet has excellent construction and unexcelled design! Easily shipped and quickly installed.

FREE *details gladly sent on request. Representatives coast-to-coast.*

ROHN *Manufacturing Co.*
P.O. Box 2000
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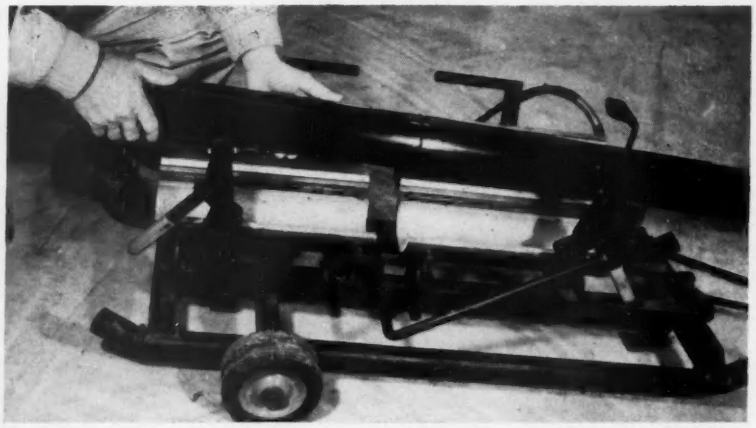
"Pioneer Manufacturers of Towers of All Kinds"



Only about 20 seconds of cooling time are required after the fusion process is completed. (Photo: Courtesy Phillips Chemical Co.)

pany installation of high density polyethylene pipe in the U. S.

During 1960 about 60 million pounds of polyethylene plastic pipe were used by the pipe industry, according to Phillips, which estimates 1961 pipe volume will amount to 65 million pounds, of which high density sales will account for 25 per cent, a new high.

This unique new approach to joining lengths of pipe is relatively simple: the to-be-joined pipe-ends (which can be cut with a common hand saw) are squared off and placed in line-up clamps so they face each other. An aluminum plate, heated to about 400 degrees F., is inserted between the two ends. After about 30 seconds of exposure to the heated plate, the pipe ends soften. When this happens, the heated plate is removed, the two molten pipe ends are gently pressed together and after about 20 seconds cooling time the joint is completed and the joined pipe is ready for the ditch.

Lightweight high density polyethylene pipe already has been cited for its non-corrosiveness, its toughness and durability. But the pipe is gaining even wider acceptance as the result of the butt fusion technique of joining, Phillips said.

High density polyethylene pipe is now available and serviceable for a variety of cross-the-board industry applications, including oil fields, gas distribution and gas gathering lines; various corrosive process lines; all types of water lines; electrical and communications conduit. For complete information write Phillips Chemical Co., Dept. TE&M, Bartlesville, Okla.

Byers Named Vice Pres. Gen. Tel. & Electronics

LIEUTENANT General Clovis E. Byers, U. S. Army (Retired), has been named vice president — Washington, D. C., office for General Telephone & Electronics Corporation. The announcement was made last month by Donald C. Power, GT&E chairman and chief executive officer, to whom General Byers will report.

Byers will be responsible for coordination of the relationships between the over-all General Telephone & Electronics organization, including the parent company and the subsidiaries, and the various branches and agencies of the Federal Government in Washington. He succeeds Rear Admiral Frederick J. Bell, U. S. Navy (Retired), who has resigned, but who will continue as a consultant to the company.

Byers was graduated from the United States Military Academy at West Point, New York, in 1920 with the Degree of Bachelor of Science, and was commissioned a second Lieutenant in the Regular Army. During the years intervening between graduation and the entrance of the United States into World War II, he held a number of command and staff assignments and also spent two periods, totaling seven years, as an instructor at the U. S. Military Academy.

During his last 17 years of active

CLOVIS E. BYERS

duty, he spent nearly 12 years in overseas assignments. They included, during World War II, combat assignments as Chief of Staff I Corps, Commanding General 32nd Division and Chief of Staff Eighth Army. During the Korean fighting he was Commanding General of X Corps, when the successful fighting took place that caused Bloody and Heartbreak Ridges to be named, and he later commanded the XVI Corps.

New Catalogs Describe Leich's 80A PABX

TWO NEW catalogs, a 4-page sales aid and an 8-page catalog which furnishes more detailed information, are now being furnished on Leich's 80A PABX. They are available from Leich Sales Corp., 427 W. Randolph St., Dept. TE&M, Chicago 6, Ill.

The 4-page sales aid is designed to help the telephone company sell its business customers on the 80-line stock PABX. It emphasizes the many time and money-saving features of the equipment. Leich states that with the 80A PABX, subscribers can dial inside, outgoing, city trunk transfer, consultation, and conference calls — without help from the attendant. Regular dial telephones without special buttons or equipment are used.

Leich's 8-page catalog includes details of all standard and optional services. Capacity, examples of equipment arrangements, and type of power supply are furnished.

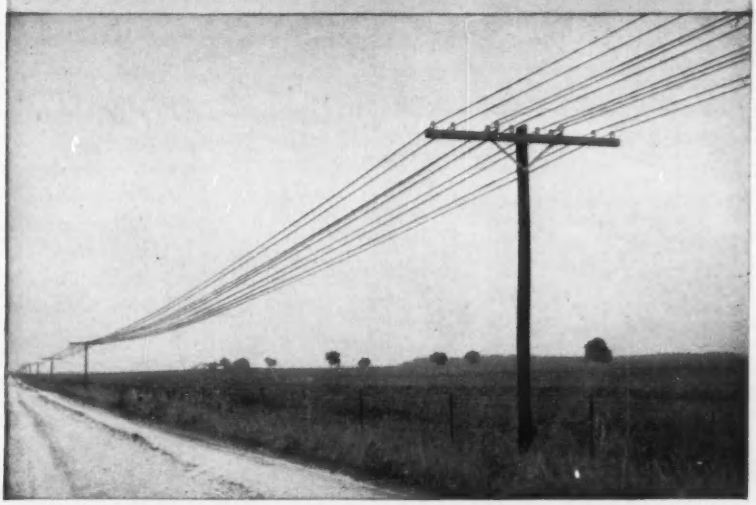
Crapo HTL-135

High Tensile Line Wire

MADE TO WITHSTAND HEAVY STORM LOADS

Time and time again, *Crapo* HTL-135 has demonstrated its ability to stand up under heavy ice and wind loads when other conductors failed. This can be attributed to the fact that *Crapo* HTL-135 combines high strength with high fatigue endurance plus superior elastic qualities which enable it to spring back into place when loads are removed. The result: service interruptions are minimized, re-sagging is seldom necessary, where this rugged telephone wire is used.

The excellent telephonic transmission characteristics of *Crapo* HTL-135 make practical subscriber loops of 14 to 15 miles with normal voltages and equipment. Longer loops are possible where higher voltages and more sensitive telephone sets are employed. For dependable, long-span, low cost rural lines, specify *Crapo* HTL-135.



HERE'S PROOF OF DEPENDABILITY

The Crapo HTL-135 in this typical rural line of 300-foot spans was subjected to two heavy ice storms within 14 months. This photo shows the line, without resagging, three months after the second storm.

Write for Manual TM-59 containing complete engineering data!

Crapo HTL-135

INDIANA STEEL & WIRE CO., INC. Muncie, Indiana

2 NEW FEATURES OF
FITCHBURG CHIPPERS

Give you longer engine life, save gas, add safety

1. **EXTRA PROTECTION** for your brush disposal crew with NEW SAFETY STOP SWITCH (now standard at no extra cost). Stops chipper within seconds.

2. **GREATER ECONOMY** with NEW SOLENOID SWITCH*. Allows operator to idle motor between actual brush feedings *from his normal feeding position.* You save on gas and engine wear.

TROUBLE-FREE Fitchburg Chippers chip tree trimmings fast. Feeding action is smooth, positive, because of *patented* spring-activated feed plate. Fitchburg Chippers are choice of telephone, power and tree service companies, and others. Send for *free book* "Chip Dollars" — write Dept. 1EM 18

*optional

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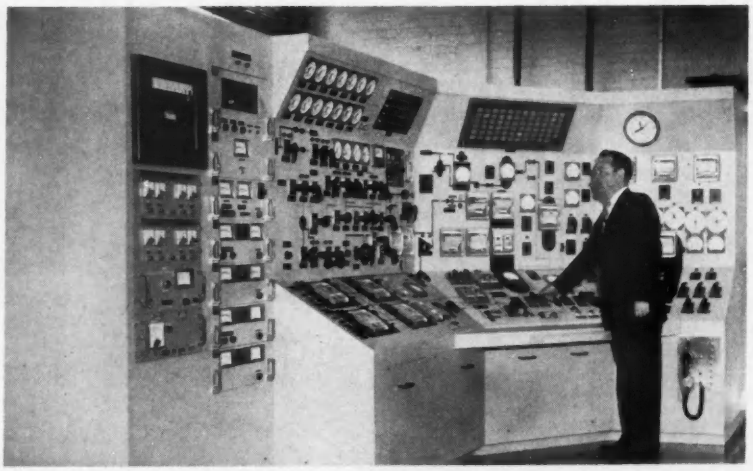
Brigadier General CHARLES S. HAYS (right,) Commanding General of the U. S. Army Signal Supply Agency, presents two "RIQAP" certificates to JAMES D. McLEAN, president of General Dynamics/Electronics, in recognition of quality production of electronic equipment for the Armed Forces by both the Military Products Division and the Telecommunication Division of the company.

Telephone-Quality Equipment To Control Nuclear Plant

TELEPHONE-quality equipment will provide the "brains" for the production of nuclear power at McMurdo Sound in Antarctica. An instrumentation and control console, built by telephone people, will regulate the new 1500-kilowatt nuclear power reactor there.

The console, recently delivered by General Dynamics | Electronics, Rochester, N. Y., enables one man to monitor and operate the power plant during normal operation.

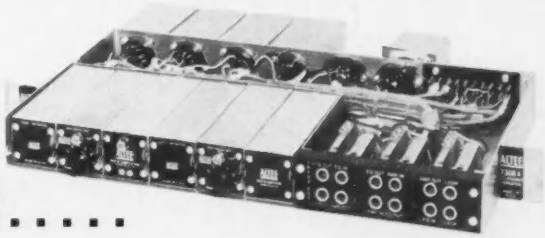
Solid-state circuitry was used extensively in the control system to achieve high reliability and compactness. The nuclear instrumentation system contains an exclusive General Dynamics 7-channel system capable of measuring and controlling the



Control instrumentation for the reactor permits one man to monitor and operate the nuclear power plant. An automatic self-checking system has been built into the control console.

2—4/4—4/2—2

SAVE TIME & SPACE WHEN ESTABLISHING REPEATERED VF TELEPHONE CHANNELS . . . . .



Altec 7300A Telephone Repeater Terminating Unit comes wired for rapid assembly of three repeater systems!

• power and space economy • superior performance • minimal heat generation • eliminates 130 v supply • reliability • plug-in modularity • simplified installation

The Altec 7300A TRTU provides rapid means of establishing repeatered VF telephone channels for general telephone, telegraph, teletype circuits, and PBX installations. The 7300A comes fully wired to receive plug-in type Altec circuit components that may be easily assembled for one of three telephone repeater systems: two-wire to four-wire termination, four-wire intermediate, two-wire to two-wire.

The compact unit occupies only 1¾" rack height on standard 19" channel relay rack. An insulated jack strip with 12 jacks permits routine system testing. Transistor amplifiers within the unit are energized by local battery or either 24-26 or 48-52 volt special power supply. 130 volt supply is not required.

The 7300A and the entire Altec line of plug-in repeater amplifiers, equalizers, networks, transformers, relays and pads is available for speedy delivery, normally from stock. For technical details and schematics on the 7300A, write for FREE Bulletin #13783-1, Dept. TE-8.

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ALTEC LANSING CORPORATION

A Subsidiary of Ling-Temco Electronics, Inc.
1515 South Manchester Ave., Anaheim, Calif.
New York • Los Angeles

NATCO CLAY CONDUIT

for

PERMANENT PROTECTION OF UNDERGROUND CABLE

Natco Clay Conduit is furnished in both single and multiple duct for the permanent protection of underground telephone, telegraph, signal, power and lighting cables against fire, corrosion, electrolysis, mechanical injury and chemical attack. Write for catalog.

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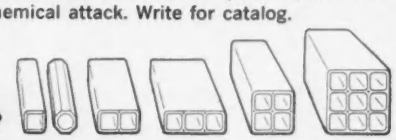

natco corporation

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Then you need this HANDY, COMPLETE TOOL KIT

18 TOOLS

EVERY TOOL NECESSARY FOR ADJUSTING, CHECKING AND TROUBLE-SHOOTING RELAYS

All 18 tools especially designed for RELAY WORK. Includes Contact Burnisher with extra blades, Spring Tension Gauge, Wrenches, Thickness Gauge Set, Inspection Mirror, etc. All in Vinyl Case.

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A strong, durable, easy cutting pruner head that cuts up to 1" branches with ease. Open stock spruce extension poles in 6 foot sections, with telescoping aluminum joints.

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Heavy duty, fast, easy cutting loppers designed for utility use.

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The famous "Tiffany" pattern lopping shears 25" and 30" models. Cut branches up to 1¾".

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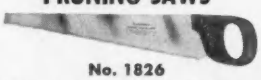

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Send for literature and additional information on pruning tools of all types.

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neutron flux in the reactor from cold startup to 150% of rated power output. The console also includes automatic self-checking circuits which will immediately inform the operator if a malfunction should develop in the instrumentation system, and will pinpoint its location.

Automatic analysis equipment will constantly monitor and control the chemical composition of the water used in the boiler. Computer techniques will be employed in the boiler feedwater control loops to anticipate any deviation from normal operating conditions.

Solid state logic networks will monitor both the reactor and feedwater systems to differentiate between secondary component failures and a potentially dangerous operating condition. They will then make a decision as to whether to continue operation or to shut down the reactor and steam generator process until the malfunction is corrected.

Chance Engineering Research Center in Operation

THE A. B. Chance Co. reports that its new Engineering Research Center, constructed during the past winter, is now in full operation. The Research Center contains 32,000 square feet of office and laboratory space in the two buildings on an 18-acre tract located near the company's general offices in Centralia, Mo.

C. H. LeVee, vice president, engineering, is in charge of the new facility and has extended an invitation to utility personnel to visit the new center and observe the operation and testing equipment.

The exterior appearance of the main building is dominated by the high-bay construction of the center's High Voltage Laboratory. This lab has a ceiling height of 62 feet, necessary to accommodate the towering 2,400,000 volt impulse generator. Sixty-cycle dielectric test transformers, with a 1,000,000 volt capacity are also located in this laboratory.

A Short Circuit Laboratory with specially designed equipment is used to test protective devices, switchgear and other apparatus. A 762,000 KVA generator is the key piece of equipment in this lab that also includes a test substation with two single-phase, 200,000 KVA short circuit tranformers. The substation and testing circuits were designed by Chance engineering personnel.

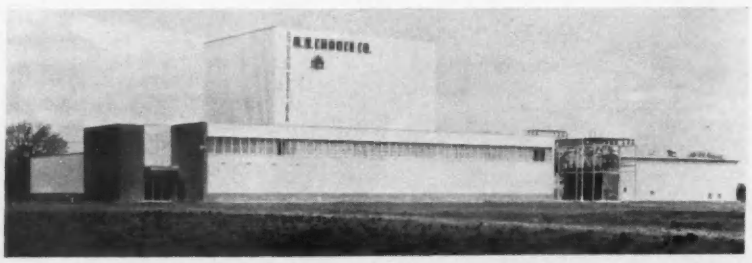
Other facilities in the center include mechanical, plastics, heat run, environmental, fuse link and electrical measurement laboratories. The latter area includes calibration equipment to insure the accuracy of all testing instruments. A model shop is also a part of the research center. Outdoor mechanical and electrical test areas are located adjacent to the Engineering Research buildings.

The facilities of this new research center will be made available to utilities, engineering colleges and other manufacturers serving the electrical industry.

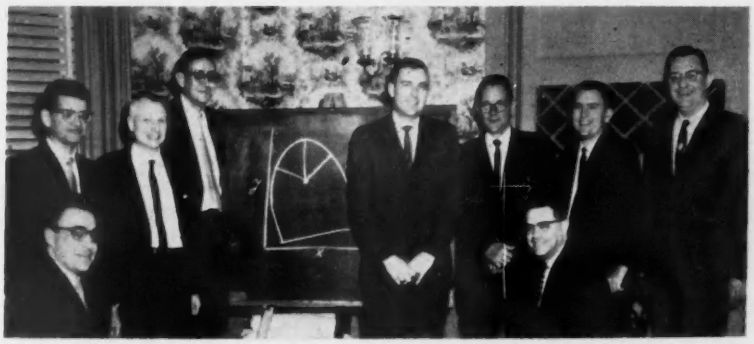
Telephone Industry Execs. Meet At New Haven, Conn.

A MEETING of telephone industry executives was held recently by Koiled Kords, Inc., at New Haven, Conn., to hear a report on methods of assuring the correct color matching of telephone cords and sets.

Since the introduction of colored telephones, Koiled Kords, Inc., according to John Brown Cook, president, has sought the solution to the



Exterior view of the F. Gano Chance Engineering Research Center located in Centralia, Mo. near the general offices of the A. B. Chance Co.



Seated at left: AMEDIO D. PETRANGELO, telephone engineer, General Dynamics (Stromberg-Carlson); Standing left to right: HAROLD BAKER, General Dynamics; ORVILLE SMITH, chemical engineer, Automatic Electric Co.; RICHARD GROSS, Arthur Little Co., engineer who headed the color matching project; WALTER PENNINGTON, quality control manager, ITT Kellogg; ROBERT HILLMAN, chemical engineer, Whitney Blake Co.; JOHN DALTON, product engineer, ITT Kellogg; RAY DUDLEY, chief chemist, Whitney Blake Co.; JOHN WOLFF standards engineer, Whitney Blake Co. (seated).

color matching problems facing this and other industries. An essential part of this problem, according to Cook, is that visual inspection is not a consistently reliable method; it is a subjective measurement affected by such things as light source and individual reactions, with no way either to establish or to meet close tolerances.

Koiled Kords, Inc. hired the Arthur D. Little Co. to make a complete study of the situation and recommend ways of measuring and controlling color. As a result, Koiled Kords, Inc. reports that it has now established a program using scientific methods for objective measurement of the color and brightness of the set and the cord compound that will correlate with visual inspection. This, they claim, will enable them to meet manufacturers' specifications within predetermined and measurable tolerances.

Kenneth E. Sandner Named Service Rep.

KENNETH E. Sandner has been appointed a service engineer for Stromberg-Carlson telecommunication products.

Sandner will serve customers on the West Coast, and will work from the Burlingame, California, Branch office. He succeeds Ralph M. Smith, who has assumed a sales position for the division in northern Nevada and northern California.

Kearney Corp. Names Cady Regional Mgr.

JAMES R. KEARNEY CORP., St. Louis, Mo., has announced the appointment of Dean Cady as regional manager of the company's newly created West Coast Region. Cady was formerly with Maydwell & Hartzell, Inc. A new regional office for the James R. Kearney Corp. has been opened at 1299 Bayshore Highway, Burlingame, Calif. Maydwell & Hartzell will continue to operate in the region as a distributor for Kearney and will work with Cady and Kearney sales representatives in the area in the promotion and sale of all Kearney products. W. L. Manchester has been named as the Kearney representative for the Los Angeles area. Manchester was also formerly with Maydwell & Hartzell. His new office address is 430 Foothill Boulevard, LaCanada, Calif.

Robert W. Mayers, formerly with Pacific Gas & Electric Co., and more recently with the A. B. Chance Co., has been appointed as the James R. Kearney Corp. representative for the San Francisco area. Mayers will operate from Kearney's West Coast Regional Office.

Van Huisseling Named Ass't. Sec'y. of Comptometer Corp.

ELECTION OF Edward J. Van Huisseling as assistant secretary of Comptometer Corporation by the company's board of directors was announced last month by Lloyd

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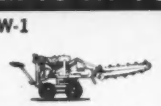
W-1 

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Drexler, vice chairman of the board and chief executive officer.

Van Huisseling, who is also assistant manager of the corporation's International Division, joined the company as a cost accountant in 1935. In 1937 he was transferred to the International Division, and in 1957 he was named assistant manager of the Division.

Anaconda Introduces New ATRC Cable

THE Anaconda Wire and Cable Company has introduced a new ATRC cable especially designed for use in telemetering, automatic relays, communications circuits, and supervisory control systems.

Robert E. McIlvane, manager-Communications Products Division, said the new cable is now in production and would have a rating of 300 volts. He stated that it was particularly adaptable for aerial, duct, and direct burial use in telemetering, automatic relays, telephonic communication circuits, supervisory control for monitoring and data recording

McIlvane pointed out that the new cable was particularly adaptable to pipe line companies, public utilities, railroads and industrials.

Additional information may be secured by writing Dept. EFL-P9 (TE&M), Anaconda Wire and Cable Co., 25 Broadway, New York, N. Y., and asking for Anaconda specifications CS 237-1.

General Electric Reorganizes Its Microwave Organization

GENERAL Electric's Communication Products Department has realigned its microwave organization, creating several new functions and positions.

G. R. Petersen, the department's marketing manager, said Walter E. Sutter, previously General Electric's national microwave sales manager, has been named manager of Microwave Systems Sales and Service.

Sutter will have responsibility for coordinating all marketing activities relating to microwave, including headquarters and field sales, systems engineering and customer services. He will have similar responsibility

for Carrier-Multiplex and Data Equipment.

Reporting to Sutter will be Al Caldera, formerly field engineering manager, who has been appointed Customer Services manager and is

SUTTER

responsible for installation and maintenance services for G-E equipment; Wayne E. Evans, formerly district sales manager at Kansas City, who becomes National Microwave Sales manager in Lynchburg and directs the headquarters and field sales unit; and Peter G. Smee, who retains the title of manager of Microwave Systems Engineering and provides technical assistance to the Sales and Service organizations through his unit.

Reporting to Evans in newly-created positions are Franklin L. Harper, who has been named RF Systems Sales manager and Arthur W. Newman, Carrier Sales manager.

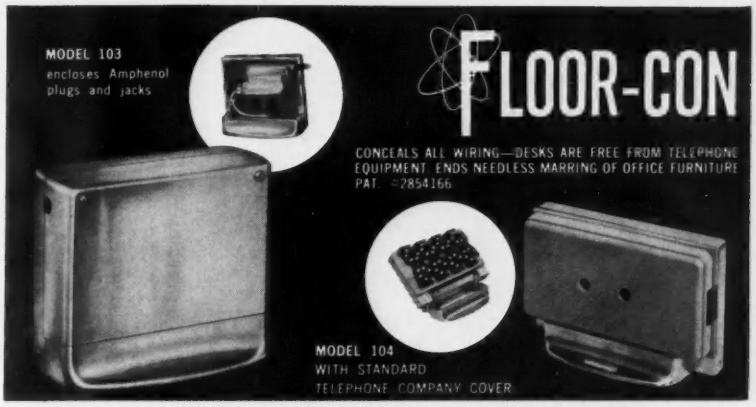
Alan Bailey Joins T. I. C. of Acton

ALAN D. BAILEY has joined the staff as Senior Electronic Engineer in the Space Instrumentation Division of Technology Instrument Corporation of Acton. He is responsible for

BAILEY

electrical and electronic instrumentation flown on research sounding rockets, deep space probes and satellite vehicles.

Formerly Bailey was an Assistant Professor at Northeastern University in Electronic Research.



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Model 103 includes the matching cover in chrome or brass satin finish. The cover encloses the amphenol plugs and jacks when used with key telephone sets or other complex equipment.
Additional connecting blocks and miscellaneous equipment can be mounted on the back of all models.

Model 104
Chrome or brass satin finish. Accommodates 4 44A Connecting Blocks.

Model 102 Not Shown
Chrome or brass satin finish. Accommodates 3 44A Connecting Blocks.

IF NO CONDUITS ARE PROVIDED, FLOOR-CON CAN BE SCREWED DIRECTLY TO THE FLOOR. NO FITTINGS ARE NECESSARY.

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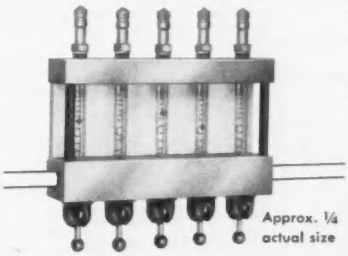

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Developed in collaboration with Bell Telephone Laboratories, Inc., each indicator of this manifold has its own toggle shutoff and pressure testing valve . . . for isolating an individual cable, providing a pressure test point and temporary gas supply inlet.

Each gauge contains a glass ball (for rates to 2½ SCFH) and a steel ball (for accurate reading of rates up to 7½ SCFH), and a sliding reference pointer to facilitate day-to-day checking of flow rate changes. All connections are anodized 24 S-T aluminum.

REQUEST Bulletin T-1a for complete data on this manifold and other Dahl pressure system valves for indicating and regulating air usage in continuous flow systems. G. W. Dahl Co., Inc., 80 Tupelo St., Bristol, Rhode Island.

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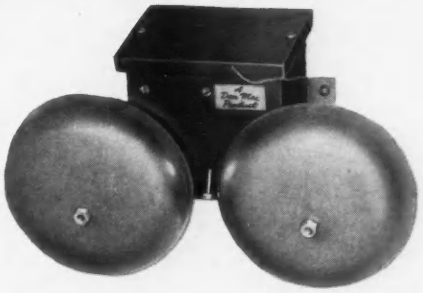

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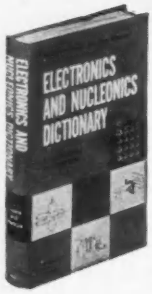

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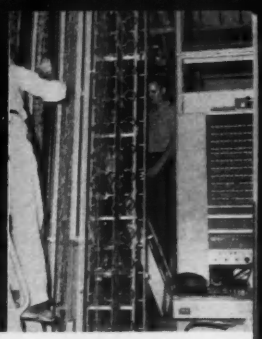
NEWS AND VIEWS OF INDEPENDENT TELEPHONY



VOLUME 10, NO. 5 | Published by the Telecommunication Division of General Dynamics | Electronics | AUGUST, 1961

Southwestern States Tel starts new Sales and Service Department

Getting the local slant. Charles F. Skinner, Bryan manager, supplies valuable information about the local business scene to Southwestern States Telephone sales and service representatives Mickey Hart and Lindsay F. Baker. Business growth in Bryan offered several opportunities for improved telephone service.

Lindsay Baker tells Don and Jack Conlee of Conlee Brothers Moving and Storage how a 6K-1 system can help in the smooth operation of their trucking firm. Sharon Kooser, secretary of the company, seems to approve the benefits offered by the system. The Conlee brothers decided to replace existing system with a three-line, four-station 6K-1 system.

From the woman's viewpoint. Chief operator Betty Windell offers her ideas on improving PBX service for multi-line subscribers. A number of Stromberg-Carlson PBX's are efficiently serving Bryan offices and factories.

"A new service to promote new services."

That's a concise description of Southwestern States Telephone Company's successful approach to handling business growth in its area.

The new service is a sales and service department which is based at company headquarters in Brownwood, Texas. Members of the department visit the numerous offices of the company and assist local businessmen in improving their own communications.

Telephone services offered range from key telephone systems to large PBX's. Among these services, the Stromberg-Carlson 6K-1 key telephone system has scored a particular success. The system, which provides up to five lines or optional services, fits the needs of a variety of modern business establishments.

Part of the acceptance of the 6K-1 is due to the large number of options it offers. Subscribers may select 10- or 15-station dial intercom, manual exclusion, automatic tie lines, and other features. These options allow the businessman, after consulting with the sales and service staff, to select the services which can help him most.

Representatives of Southwestern States Tel's sales and service department recently visited Bryan, Texas, businessmen and offered their consulting services. The photos on this page show some of the results.

Photo above: Cutover time. See story on next page.

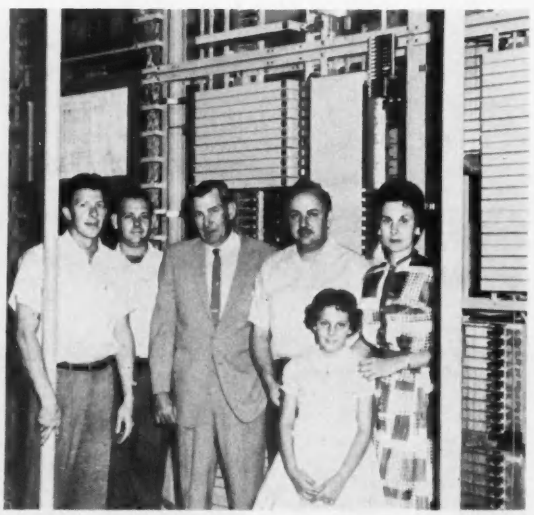
Taking his facts right from the book, Lindsay Baker outlines the many optional features available with the 6K-1 system. Charles F. Hillier and son Russell who operate the Hillier Funeral Home agreed with Lindsay's thinking, selected a four-line, ten-station 6K-1 system.
(Far Right) Senior combinationman J. R. Witt fills in the sales and service staff on availability of additional lines for Bryan subscribers who require new services.

XY® Dial for 13,500 as four Alabama, California,

Iowa Association secretary William F. Miller (right) and Mrs. Miller had a pre-cutover trial of the new toll equipment serving Fairfield, Iowa. Cecil Stokes (left), commercial supt., and Mr. L. E. Travis, president of the United Telephone Company of Iowa, were among those from Newton headquarters supervising the conversion.

Cutover night at Exeter, California. Guests in equipment room listen as XY switches take over the local operator function. At right, Robert Phelps, assistant to vice president W. Gilman Snyder, gives a confident appraisal of the completed conversion.

Mr. and Mrs. Eldon Eckles (right) of Blue Earth, Minnesota, with W. J. Pfaender, Chicago branch manager for Stromberg-Carlson products, and V. C. Burchett, Stromberg-Carlson sales representative in Minnesota and the Dakotas. Blue Earth is the largest XY Dial office in Mr. Eckles' operating companies.



"My daddy built this." Jyme Lynn Canone has every reason to feel proud of her dad, who was installation foreman for the new XY Dial office at Atmore, Ala. The "Stromberg-Carlson" group (l-r): Bud Turner, Ray Stayner, installers; Curt Meyers, assistant chief installer from Rochester; Mr. and Mrs. James Canone.

towns are converted in

Iowa and Minnesota

After fifteen years, and more than 3,000 similar occurrences, there is still an excitement about the moment when a telephone manager, eye on watch, says the magic word "Cut!" It was true early this summer at Atmore, Alabama; Exeter, California; Fairfield, Iowa; and Blue Earth, Minnesota . . . and will be for nearly a hundred more towns during the second half of this year.

All four managers: Bill Corman (Atmore), Jack Maguire (Exeter), Larry Travis (Fairfield) and Eldon Eckles (Blue Earth) had been completely satisfied with earlier installations of XY Dial in other exchanges; some had also experienced certain limitations in other types of dial equipment previously used. They were now confident.

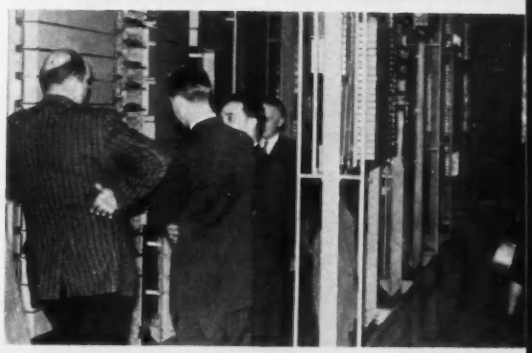
These are all good-sized towns, as Independents go, each an important toll center as well as business hub of the surrounding area.

Atmore has an interesting — though not unique — situation where subscribers are on both sides of the Alabama-Florida state line, and therefore provision had to be made for handling two area codes for long distance while providing free service for all local calls.

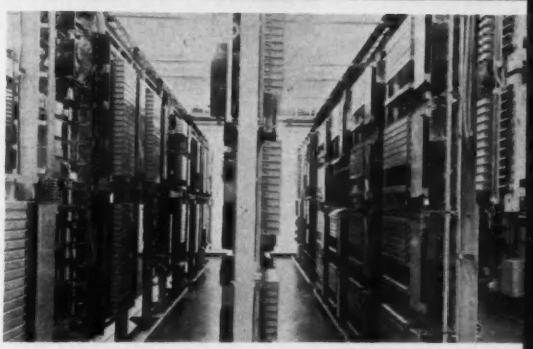
Exeter stands where California's Central Valley meets the high Sierras near Sequoia National Park. Fairfield serves the needs of a highly productive Iowa agricultural region, is home of Louden Cranes and some smaller manufacturing companies, as well as of Parsons College. Blue Earth is one of Minnesota's canning and freezing centers for sweet corn, peas, and turkeys.

Doris Wilson is records clerk in the Fairfield office of the United Telephone Company of Iowa. Her "office" includes the power and supervisory equipment where tests can be made, troubles interpreted and corrective steps taken.

Fortunate is the manager who has at his right hand a trained, dependable plant man like Don Chilson of Blue Earth. Prior to the cutover, Don attended the XY Training School to polish up his knowledge of dial operation and maintenance.



Largest of the several XY Dial offices now serving the Central California Telephone Company is Exeter. The group making a last-minute inspection includes E. R. Sears, Sr., West Coast branch manager; R. J. Cushing and R. M. Smith, sales representatives for Stromberg-Carlson.



This photo of the impressive equipment room at Blue Earth shows the symmetrical beauty, efficient compactness of XY Dial equipment. It is double-sided for economy of floor space, has a flexible arrangement of shelves to meet local operating conditions, with provision for expansion.

(Right) Ready for the first calls through the new Stromberg-Carlson No. 3 toll board at Atmore, Alabama. Standing (r) is Julia Bryars, chief operator; at her right is Miss Sumner Hunt of Southern Bell, Mobile.

(Left) Visitors from Minnesota at the Fairfield, Iowa, conversion — Allen Lindekugel, division general manager of the Central Tel. Co., Fairmont; and Eldon Eckles, president of the Blue Earth Valley Tel. Co.

Chief executive goes underground

Some months ago, if you called "Blue Earth 200" you'd be directly connected to Eldon Eckles, president, in his "office." Or perhaps there would be a call from him concerning some phase of the dial installation. All normal except the setting — an open manhole under one of the busiest streets in this Minnesota town.

An electric heater kept fingers free from frostbite; there was an abundance of fresh air; plenty of work interconnecting local and long distance cables to the new plant. Cement blocks made a sturdy — if not too comfortable — chair. And of course the telephone — a colored instrument. In this unusual photo, Mr. Eckles places a long distance call while Adrian Kaus continues his splicing of local lines.

Pleasant surroundings for paying bills

The business office at Atmore, Alabama, is "good taste" defined. The marble facing came from quarries in the Kentucky mountain area where Mr. Minor Corman started his telephone career 60 years ago. The first customer arrived before the permanent front-office counter had been installed.

Whether by accident or design, Mr. A. P. Webb, Jr., a hardware merchant in Atmore, Alabama, was the first subscriber to transact business in the new building. Mrs. Thelma Heathcock takes his bill as Miss Myrtle Mae Williams, office manager, answers the phone.

"I wish you could hear this British operator's accent!"

"This English English nearly makes me break up," says operator in foreground to other "assisting" girls of the Atmore, Alabama, office. One of the first calls, on cutting new Stromberg-Carlson equipment into service, was for Liverpool, England.

Everything was ready at Atmore, Alabama; certain girls on the new toll board; the others gathering to watch as soon as they went off duty at the old manual office. The minute hand crept ever so slowly toward the zero hour — even a trained operator gets a little fidgety.

They heard manager Bill Corman in the next room say, "Cut!" and almost immediately incoming lamps began to glow.

"This is Long Distance."

"I want Liverpool, England, Stoneycraft 4830."

"Stoneycraft 4830 . . . Liverpool? . . . *England!*"

(Hold it, gal; you've trained for the unusual; what's a little thing like overseas for your first call? But why are my hands shaking on these keys? Well, here goes.)

Mobile, White Plains, and then the strange, clipped accent. "Plug in, girls, — this operator is so terribly English."

Ready . . .

Mayor William Foshier of Fairfield (foreground) learns from Larry Travis, pres. of United of Ia., how to pull insulators.

Get set . . .

Poised waiting for the signal, these men working under the direction of W. J. Morris, plant mgr. will bring to life the 4,000-terminal office in Atmore, Ala.

Cut!

Out come the insulators at Exeter, Calif. Visitors as well as company personnel were part of this exciting moment.

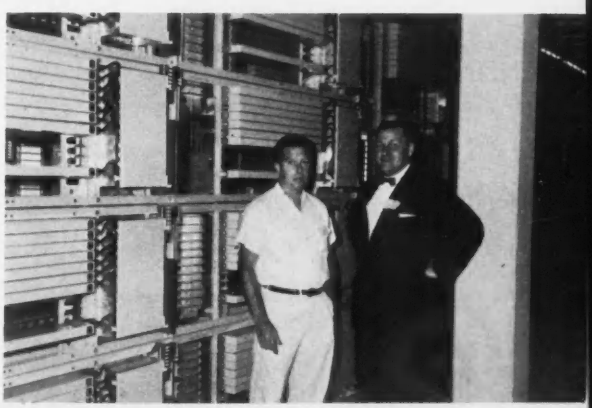
Clock shows ten seconds to go, and operators are ready for a burst of activity through the new toll board at Blue Earth, Minn.

Ten seconds more and this will be a brightly lighted Christmas tree

While waiting for the cutover signal that would activate the XY Dial equipment and new toll board at Blue Earth, Minnesota, some old-timers were recalling that perhaps the first telephones in the whole state were used here. In 1876, banker W. E. C. Ross, visited the Philadelphia Centennial where Dr. Bell gave a demonstration of his new invention. Mr. Ross purchased a set of phones, put one in the back of the bank building, the other in the home of a young lady who later become Mrs. Ross. This may well have been the beginning of the "party" line.

Fairfield was United of Iowa's largest manual office

When the large group of subscribers served by the Fairfield office received dial this summer, United of Iowa came a long step closer to 100% dial system-wide. On hand at cutover, in addition to Larry Travis and Cecil Stokes of Newton, were Fred Pyle, representing the headquarters office in Kansas City, and Gene Savage, division equipment supervisor. Sid Crook was among those representing Stromberg-Carlson sales.



On hand at Fairfield to see that every last detail has been taken care of: Richard Davidson (left), service engineer, and Edward Flint, sales engineer, of General Dynamics | Electronics.

Goes round and round and comes out here. Gene Eash, right, of Wellman Cooperative Telephone Assn., traces through a circuit as Charles Leonard of North-West Telephone's Chetek, Wisconsin, office makes suggestions.

While the men hit the books, Who's minding the store?

A toll ticketing bonus. These managers were delighted that several sessions on the XY Toll Ticketing system were included as a regular part of their training. From the left, they are Fred Rector, Rosebud Telephone Co.; Ross Holt, Holt Telephone Co.; Ben Douglas, Thermal Belt Telephone Co. (Bottom Photo) Subscribers in Rison, Ark., will be double winners from the latest class. David and Howard Fine, manager and owner, respectively, of Cleveland County Telephone Co., were two of the men thoroughly trained in operation and maintenance of the XY Dial system.

Anyone visiting the latest class at the Telecommunication Training School in Rochester, N. Y., might well have asked that question.

Ten men who manage Independent telephone companies — a larger proportion than in any previous session — were among the 39 students enrolled in the course just completed. This session, the 56th, brought the number of graduates to more than 1500 men (and three women), highly trained in the theory and practical maintenance techniques for the XY Dial system.

Although these managers represented diverse parts of the country and could argue politics, baseball allegiance, or climate, their opinion on one subject was identical — continued growth for Independent operating companies. And this usually led to questions in two specific areas: what are the unique advantages of XY Magnetic Toll Ticketing that have increased its acceptance so markedly in the last year or so; and the desire to learn more about what the leader in electronic switching has produced, and whether a Stromberg-Carlson DYNALOGiC* system might have application in their own future growth.

One company where growth could have been a problem is the Holt Telephone Company of Poteau, Oklahoma. Manager Ross Holt solved this recently by converting his principal office to XY Dial. His first conversion, in Wister, was made with another type of switching; a second, and somewhat larger, office at Heavener saw the change to XY Dial.

Ben Douglas, manager of the Thermal Belt Telephone Company, believes that his town — Tryon, North Carolina — may have been named for the same Colonel Tryon who was a well-known figure in early Rochester history. He was certain, however, about one bit of history. A subscriber had a 1906 Stromberg-Carlson telephone that it seemed a shame not to continue to use, but the mouthpiece was broken. Through Bob Lake, sales representative in the Carolinas, Ben was able to locate one — a perfect match for the set.

Fred Rector comes from Rosebud, Texas, where agricultural East and cattlemen's West meet along the great fault. The early settlers hadn't quite decided on a new name for their village when a journeyman printer, wearing a bright fresh rosebud in his coat, arrived with the idea of locating. Each day he had a fresh flower in his lapel — a sight strange enough in these parts to rivet attention and eventually provide a new name for the village.

Gene Eash, manager of Wellman (Iowa) Cooperative Telephone Association, grew up in what was once the turkey center of the world. In fact, before entering the telephone industry, Gene worked his way up to assistant plant manager at a nearby turkey-processing plant.

Most of Gene's subscribers are Mennonites, and he thoroughly understands their philosophy and customs. Gene tells an interesting story about his friend and former president of the Cooperative, W. P. Marner. Mr. Marner, a Mennonite, worked hard and saved his money. One day he decided that he was serving on too many boards, doing too many things that weren't really important to him.

At his own expense, Mr. Marner went back to school, trained to become a lay educational missionary and is now working with Indians on a Canadian reservation.

A smooth-working father and son team, Howard and David Fine, operate the Cleveland County Telephone Company of Rison, Arkansas. Howard owns the company, and David serves as central office manager. David works particularly hard at his job — says he wants to impress his dad so he can hit him up for a raise.

Charles Leonard, local manager at the Chetek, Wisconsin, office of the North-West Telephone Company, is enthusiastic about the future of electronic switching in the telephone industry. He is already studying electronics, as applied to telephony, through a correspondence course.

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THE BACK OF THE BOOK

By JOHN G. REYNOLDS

Wise Words From The Past

A CENTURY and more ago the phrase "*welfare state*" was not known. But the philosophy it describes was — and had been all through recorded history. And some of the greatest Americans warned tellingly against its dangers.

For instance, Abraham Lincoln said: "*The legitimate object of government is to do for a community of people whatever they need to have done, but cannot do at all, or cannot so well do, for themselves, in their separate and individual capacities. In all that people can individually do as well for themselves, government ought not to interfere.*"

Then, long before that, Thomas Jefferson expressed the same philosophy in other words: "*I place economy among the first and most important service, and public debt as the greatest of dangers to be feared. To preserve our independence, we must make our choice between economy and liberty or profusion and servitude. If we run into such debts, we must be taxed in our meat and drink, in our necessities and our comforts, in our labors and in our amusements. If we can prevent the government from wasting the labors of the people, under the pretense of caring for them, they will be happy.*"

We can profit, if we only will, from these wise words from the past.

Who Must Pay

THE HEAD of the Citizens Public Expenditure Survey, a New York organization, has issued an important warning to the people of this country.

It amounts to this: *The potpourri of government spending plans now being hatched will have to be paid for by middle and lower income groups — not by the rich.*

The reason is simple enough. Taxes on big incomes have just about reached the ultimate — 91 per cent at the top. And the people with big incomes are very few in number. Even if they were taxed at a 100 per cent rate in the upper brackets the resulting revenue would hardly make a noticeable dent in present federal budgets.

So, if government spending continues to soar, the man of moderate means will have to pay the bill, one way or another. No one else can. He has no way of controlling public expenditures except at elections when he can vote for or against men and measures that represent excessive extravagance, debt and taxation.

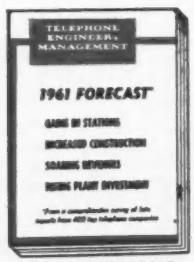
TE&M's Marketing Issue

EARLY this year when we started planning the July 15th "Telephone Marketing Issue" of TE&M, we hoped the issue would please our readers. Shortly after the issue was mailed we discovered that *readers were pleased*, and we were on the receiving end of demands for extra copies that soon used up our surplus copies.

Of course we are *pleased* that our readers liked the issue to the extent that several have suggested that we consider reprinting the entire editorial section of the July 15 issue of TE&M as a "Telephone Marketing Handbook." Some companies have told us that if we make the reprint available, they will distribute copies to employes.

How about you? Would a Handbook containing the articles featured in the July 15th issue of TE&M be of interest and value to the employes of your company? If you feel it would, drop us a line, give us some idea of the number of copies you will need, and we will let you know the cost.

The Handbook will consist of 64 pages and it will feature the following articles: (1) "Marketing — Key To The Future;" (2) "Sell More — Serve More — Earn More;" (3) "Talking A Mile A Minute;" (4) "A Planned Sales Approach To The Business Customer;" (5) "Boosting Directory Revenues;" (6) "The Plant Man's Part In Marketing;" (7) "How You Gonna Sell 'Em Down On The Farm;" (8) "Boosting Revenues From Booths and Paystations;" and (9) "Traffic Can Help Your Marketing Program."



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Shigenobu Matsuda

"Shige" is one of our "Revenue Men" in Honolulu, Hawaii.

He grew up in a small sugar plantation town on the Island of Hawaii. His first goal was an education, and Shige completed the first phase at Laupahoehoe High School. He then joined the U. S. Army.

Immediately after his Army hitch, he set his sights on a college education. He earned a good part of his way through the University of Hawaii, and graduated in 1951.

His career field chosen, Shige immediately went to work gaining sales experience in several different product fields.

It was in 1957 that he joined General Telephone Directory Company as a sales representative in our Honolulu unit. Last year he was promoted to Sales Supervisor of the Honolulu unit.

Shige is a family man, and he and his wife have two young daughters.

Men like Shige Matsuda are an asset to any community. It's a common trait of the "Revenue Men" who work for the General Telephone Directory Company . . . and for you.

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